

# GROOMING MOWERS

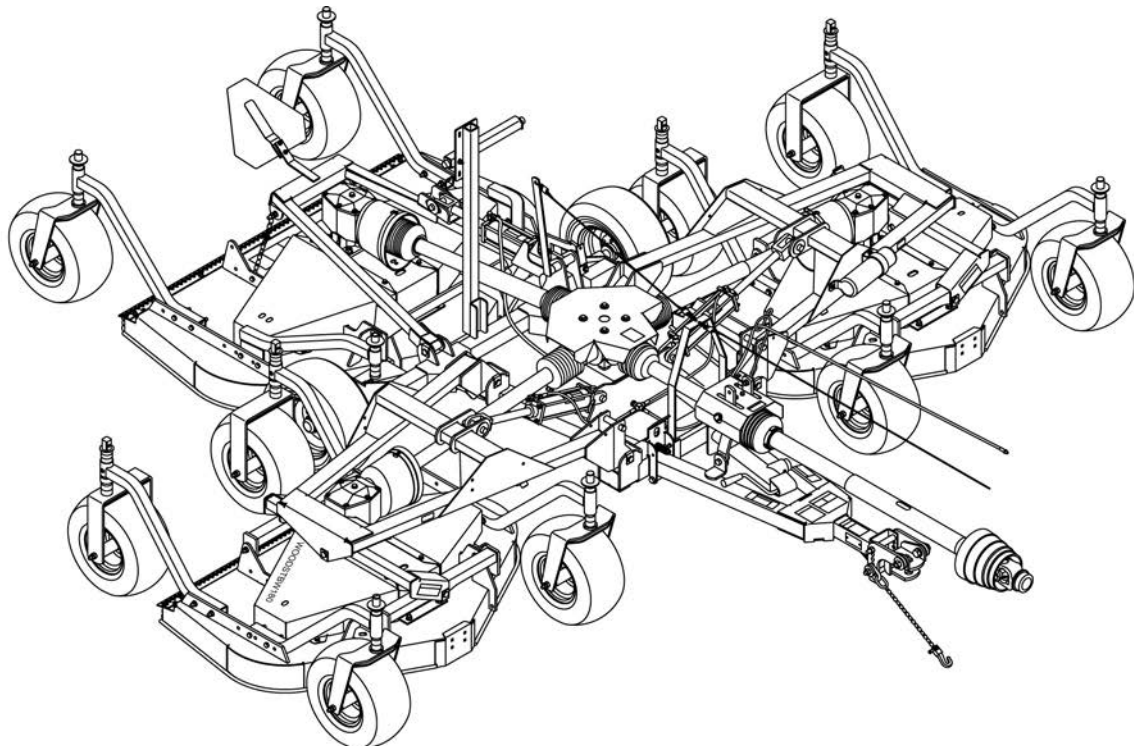
FM1012

FM1015

FM1017

## REAR DISCHARGE

Serial Number 1XFFM10XAB0000106 & Above



**FRONTIER**<sup>TM</sup>

## TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Frontier dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

## TO THE OWNER:

Read this manual before operating your Frontier equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Frontier dealer has trained mechanics, genuine Frontier service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Frontier service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

**Model:** \_\_\_\_\_ **Date of Purchase:** \_\_\_\_\_

**Serial Number: (see Safety Decal section for location)** \_\_\_\_\_

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Indicates a hazardous situation that, if not avoided, will result in death or serious injury.



Indicates a hazardous situation that, if not avoided, could result in death or serious injury.



Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

**IMPORTANT**  
or **NOTICE**

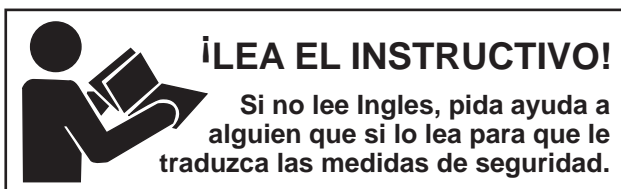
Is used to address practices not related to physical injury.

**NOTE**

Indicates helpful information.

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## SPECIFICATIONS

MODEL	FM1012	FM1015	FM1017
Cutting Width	12'	15'	17'
Cutting Height Range	1.0" - 5.0"	1.0" - 5.0"	1.0" - 5.0"
Shipping Weight (Approximately)	3,010 lbs.	3,300 lbs.	3,450 lbs.
Blade Speed (feet per minute)	18,000	18,000	18,000
Blade Spindles	7	9	9
Number of Blades	7	9	9
Universal Drive Series	(Input: ASAE Cat 4; Wing: ASAE Cat 3)		
Transport Wheels	20.5" x 8.0" - 10	20.5" x 8.0" - 10	20.5" x 8.0" - 10
Caster Wheels	15" x 6.00" - 6	18" x 9.50" - 8	18" x 9.50" - 8
Tractor PTO Speed	540 rpm	540 rpm	540 rpm
Recommended Minimum Tractor Horsepower	30 hp	35 hp	40 hp



**This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.**

# GENERAL INFORMATION

## **WARNING**

■ **Some illustrations in this manual show the mower with safety shields removed to provide a better view. The mower should never be operated with any safety shielding removed.**

The purpose of this manual is to assist you in operating and maintaining your Flex Wing Mower. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature, due to unknown and varying operating conditions. However, through experi-

ence and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing. However, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the tractor facing the direction of forward travel. Blade rotation is clockwise as viewed from the top of the mower.

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## NOTES

# SAFETY RULES



**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

## TRAINING

- **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer.) Failure to follow instructions or safety rules can result in serious injury or death.**
- **If you do not understand any part of this manual and need assistance, see your dealer.**
- **Know your controls and how to stop engine and attachment quickly in an emergency.**
- **Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.**
- **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**
- **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- **Never allow children or untrained persons to operate equipment.**

## PREPARATION

- **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**
- **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**
- **Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.**
- **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**
- **When attaching a pull-type unit to the tractor drawbar, always use a high-strength drawbar pin. The drawbar pin must have a device that will lock it into position. Secure safety chain to attachment and tractor.**
- **Make sure attachment is properly secured, adjusted, and in good operating condition.**
- **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**
- **If equipped with driveline guard tether chains, make sure they are attached to the tractor and equipment as shown in the pamphlet that accompanies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on driveline before putting equipment into service.**
- **Before starting the power unit, check all equipment driveline guards for damage. Replace any damaged guards. Make sure all guards rotate freely on all drivelines. If guards do not rotate freely on drivelines, repair and replace bearings before putting equipment into service.**

*(Safety Rules continued on next page)*

# SAFETY RULES



**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.
- Inspect chain shielding before each use. Replace if damaged.
- Remove accumulated debris from this equipment, power unit, and engine to avoid fire hazard.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.
- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.
- Never attach the mower release rope to the operator, the operator's clothing, or the tractor seat.
- Make test turns, both left and right. Check that both the hydraulic hose and the mower transport lock release rope do not become taut or caught on any parts of the tractor or mower.

## TRANSPORTATION

- The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's maximum transport speed. Doing so could result in:
  - Loss of control of the implement and tractor
  - Reduced or no ability to stop during braking
  - Implement tire failure
  - Damage to the implement or its components.
- Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.
- Do not operate PTO during transport.

- Never tow this implement with a motor vehicle.

## OPERATION

- Only engage power when equipment is at ground operating level. Always disengage power when equipment is raised off the ground.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.
- Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.
  - If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
  - This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).
- Never direct discharge toward people, animals, or property.
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.

*(Safety Rules continued on next page)*



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.
- Operate tractor PTO at 540 RPM. Do not exceed.
- Do not operate mowers on terrain that raises mowers beyond 25 degrees. Exceeding this design limit will result in U-joint “knocking noise” and potential driveline failure and could cause driveline to pull apart.
- Before raising or lowering wings, front hitch/lift and rear wheel/lift cylinders must be fully extended and all four cylinder locks installed. This prevents rotor and bearing support damage that can result from ground contact.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- Always connect safety chain from equipment to towing vehicle when transporting.

## **MAINTENANCE**

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Before working underneath, carefully read Operator’s Manual instructions, disconnect driveline, raise mower, securely block up all corners with jackstands, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failures, or mechanical component failures.

- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
- To prevent contamination, clean and then cover hose ends, fittings, and motor ports with tape.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.
- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
- Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.
- Tighten all bolts, nuts and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Do not disconnect hydraulic lines until engine is stopped, power unit is properly secured, equipment and all components are lowered to the ground, and system pressure is released by operating all valve control levers.

*(Safety Rules continued on next page)*

# SAFETY RULES



**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- When lubricating telescoping PTO drives, keep fingers out of shield access slots to prevent injury.
- Wear gloves when installing belt. Be careful to prevent fingers from being caught between belt and pulley.
- Use care when installing or removing belt from spring-loaded idler. Springs store energy when

extended and, if released suddenly, can cause personal injury.

## STORAGE

- Block equipment securely for storage.
- Keep children and bystanders away from storage area.





# SAFETY & INSTRUCTIONAL DECALS

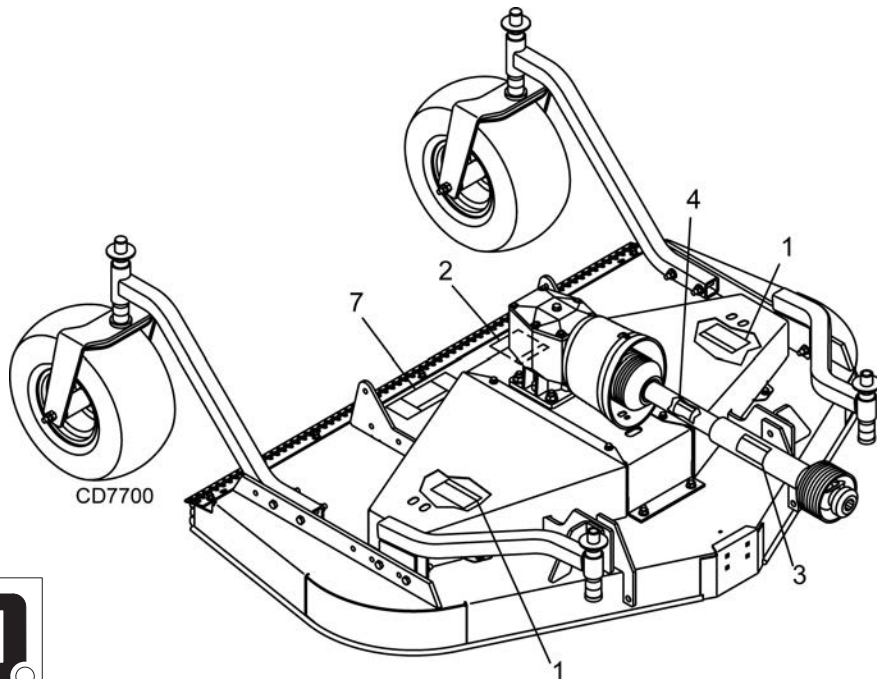
**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

**Replace Immediately If Damaged!**

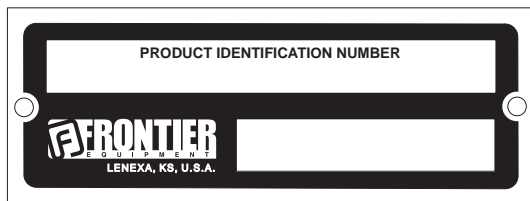
1 -5WP18867



FM1015 & FM1017  
 REAR DECK  
 (FM1012 SIMILAR)



5 - Serial Number Plate



### BE CAREFUL!

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replacement safety decals can be ordered free from your dealer.

2 - 5WP15503



8 - 5WP18866





# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



**Replace Immediately If Damaged!**

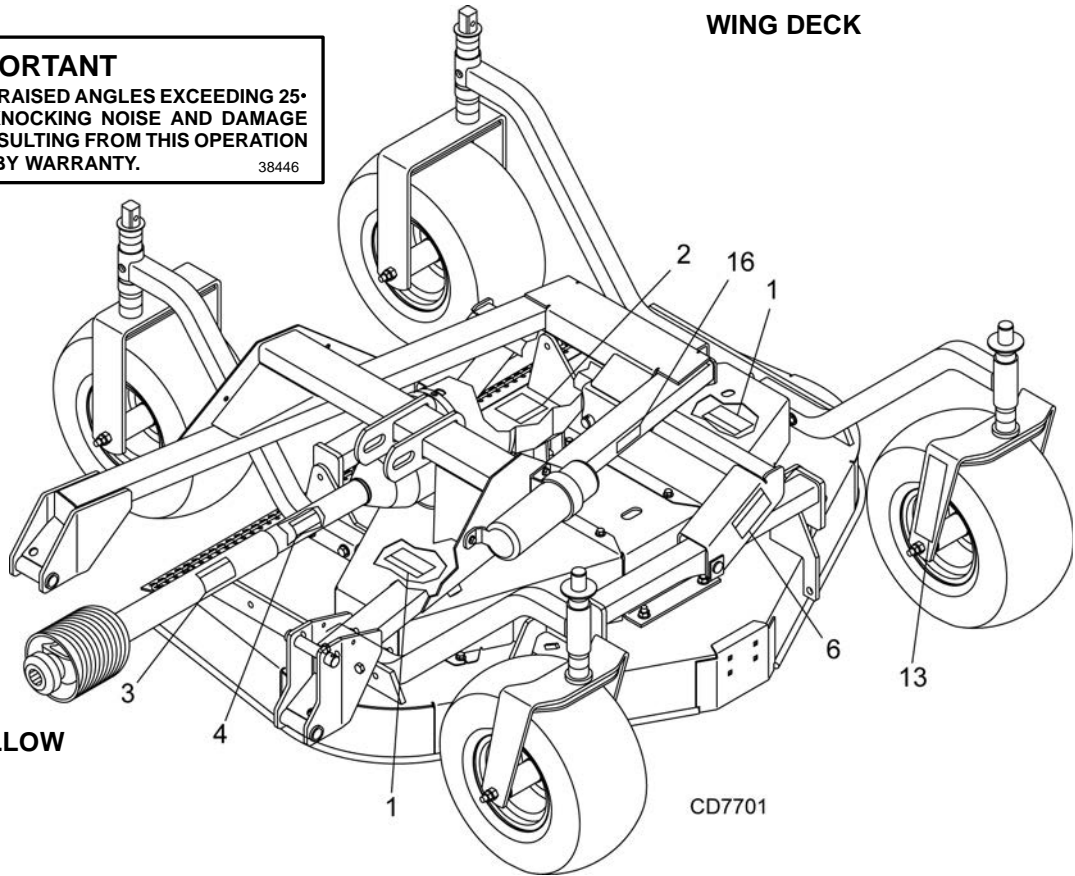
16 - 5WP38446

### IMPORTANT

OPERATING MOWERS AT RAISED ANGLES EXCEEDING 25° WILL CREATE U-JOINT KNOCKING NOISE AND DAMAGE DRIVELINE. FAILURES RESULTING FROM THIS OPERATION WILL NOT BE COVERED BY WARRANTY.

38446

WING DECK





13 - 5WP1002940 YELLOW FRONT REFLECTOR

12 - 5WP18869



9 - 5WP18865

 <b>WARNING</b>	
	
<b>FALLING OFF CAN RESULT IN BEING RUN OVER.</b>	
<ul style="list-style-type: none"> <li>■ Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.</li> <li>■ Buckle Up! Keep seat belt securely fastened.</li> <li>■ Allow no riders.</li> </ul>	
<b>RAISED EQUIPMENT CAN DROP AND CRUSH.</b>	
<ul style="list-style-type: none"> <li>■ Before working underneath, follow all instructions and safety rules in operator's manual and securely block up all corners of equipment with jack stands.</li> <li>■ Securely blocking prevents equipment dropping from hydraulic leak-down, hydraulic system failures or mechanical component failures.</li> </ul>	
<b>FALLING OFF OR FAILING TO BLOCK SECURELY CAN RESULT IN SERIOUS INJURY OR DEATH.</b>	
<small>18865-C</small>	

3 - 5WP18864

 <b>DANGER</b>


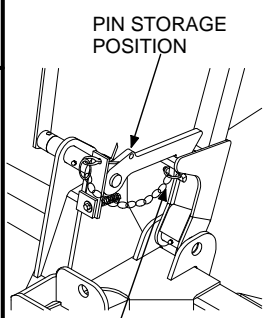
<b>ROTATING DRIVELINE CONTACT CAN CAUSE DEATH</b>
<b>KEEP AWAY!</b>
<b>DO NOT OPERATE WITHOUT-</b>
<ul style="list-style-type: none"> <li>■ ALL DRIVELINE GUARDS, TRACTOR AND EQUIPMENT SHIELDS IN PLACE</li> <li>■ DRIVELINES SECURELY ATTACHED AT BOTH ENDS</li> <li>■ DRIVELINE GUARDS THAT TURN FREELY ON DRIVELINE</li> </ul>
<small>18864B</small>



# SAFETY & INSTRUCTIONAL DECALS

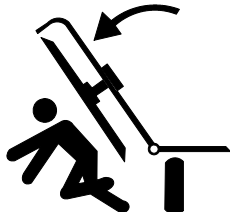
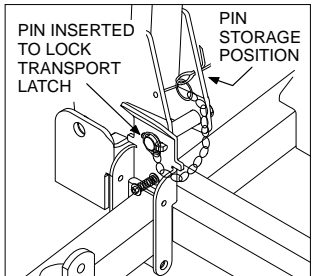
**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**  
Replace Immediately If Damaged!



 <small>44650</small>	<h2 style="margin: 0;">⚠ WARNING</h2> <h3 style="margin: 5px 0 0 0;">RAISED MOWER CAN DROP AND CRUSH</h3> <ul style="list-style-type: none"> <li>■ Before working underneath rear mower:           <ul style="list-style-type: none"> <li>■ Raise rear mower to transport position.</li> <li>■ Insert pin to lock transport latch.</li> <li>■ Securely block up rear of mower. See manual.</li> </ul> </li> <li>■ Blocking up prevents mower dropping from transport latch release or failure, hydraulic leak down, or hydraulic system failures.</li> </ul> <p style="margin: 10px 0 0 0;"><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>	 <small>PIN STORAGE POSITION</small>  <small>PIN INSERTED TO LOCK TRANSPORT LATCH</small>
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7 - 5WP44650

11 - 5WP44651

 <small>44651</small>	<h2 style="margin: 0;">⚠ WARNING</h2> <h3 style="margin: 5px 0 0 0;">RAISED MOWERS CAN DROP AND CRUSH</h3> <ul style="list-style-type: none"> <li>■ Keep away. Do not go underneath.</li> <li>■ When raised, insert pins to lock transport latches.</li> <li>■ Lower after transport.</li> </ul> <p style="margin: 10px 0 0 0;"><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>	 <small>PIN INSERTED TO LOCK TRANSPORT LATCH</small> <small>PIN STORAGE POSITION</small>  <small>SIDE MOWER TRANSPORT LATCHES</small>
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6 - 5WP38421

4 - 5WP33347

**DANGER**



**GUARD MISSING.  
DO NOT OPERATE.**


**DANGER**



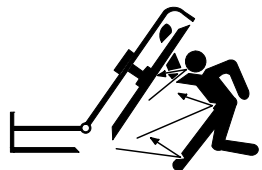
**GUARD MISSING.  
DO NOT OPERATE.**

33347E

**DANGER**

<h2 style="margin: 0;">⚠ WARNING</h2>	
 <small>38421-A</small>	<h3 style="margin: 0;">RAISED MOWER CAN DROP AND CRUSH</h3> <ul style="list-style-type: none"> <li>■ Before working underneath side mowers, lower side mowers and securely block up. See manual.</li> <li>■ Blocking up prevents mower dropping from transport latch release or failure, hydraulic leak down or hydraulic system failure.</li> </ul> <p style="margin: 10px 0 0 0;"><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>

17 - 5WP44656

<h2 style="margin: 0;">⚠ WARNING</h2>	
 <small>44656</small>	<h3 style="margin: 0;">RAISED MOWERS EXPOSE BLADES AND INCREASE THROWN OBJECT HAZARDS</h3> <ul style="list-style-type: none"> <li>■ Only raise for transport.</li> <li>■ Stop mowers before raising.</li> </ul> <p style="margin: 10px 0 0 0;"><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>

# SAFETY & INSTRUCTIONAL DECALS

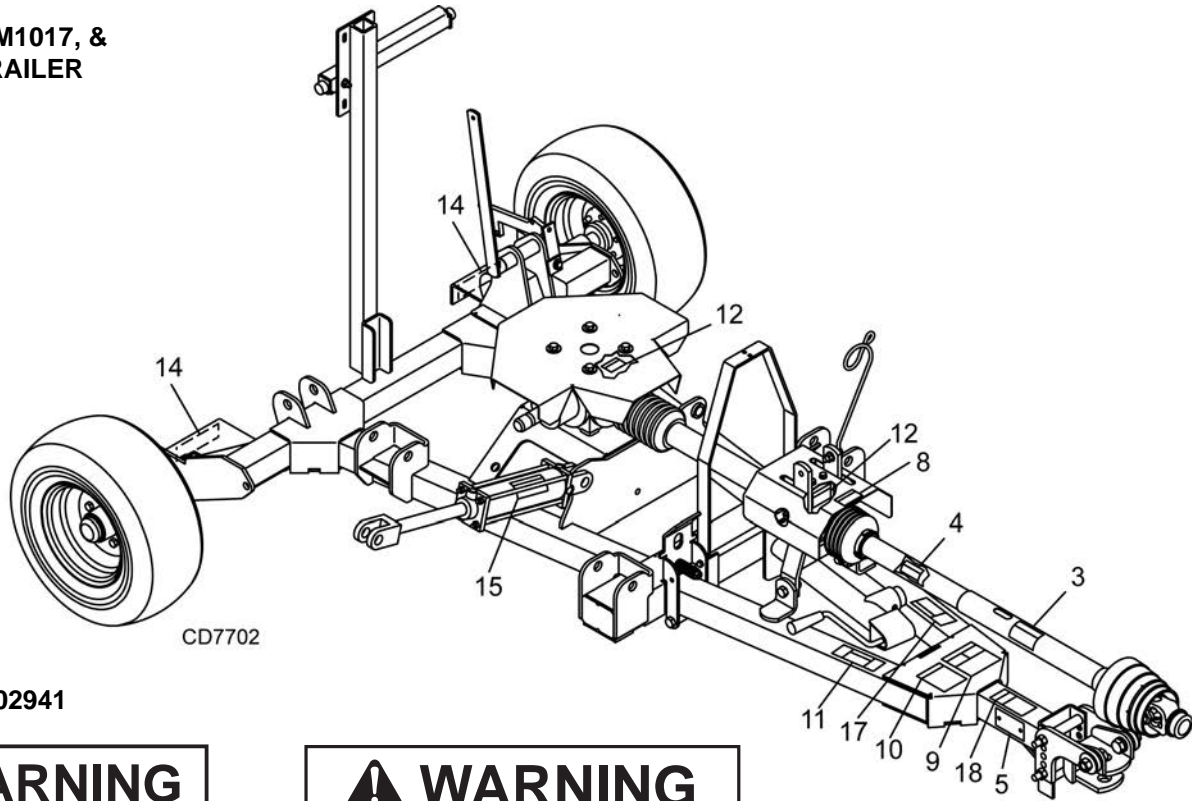


**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



**Replace Immediately If Damaged!**

FM1015, FM1017, &  
FM1012 TRAILER



18 - 5WP1002941

**⚠ WARNING**

**CRUSHING AND PINCHING HAZARD**

- Be extremely careful handling various parts of the machine. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement.
- Operate tractor controls from tractor seat only.
- Do not stand between tractor and implement when tractor is in gear.
- Make sure parking brake is engaged before going between tractor and implement.
- Stand clear of machine while in operation or when it is being raised or lowered.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

1002941-A

**⚠ WARNING**

**TO AVOID SERIOUS INJURY OR DEATH:**

- Read Operator's Manual (available from dealer) and follow all safety precautions.
- Keep all shields in place and in good condition.
- Operate mower from tractor seat only.
- Lower mower, stop engine and remove key before dismounting tractor.
- Allow no children or untrained persons to operate equipment.
- Do not transport towed or semi-mounted units over 20 mph.

**FAILURE TO OPERATE SAFELY CAN RESULT IN INJURY OR DEATH.**

18877-C

10 - 5WP18877

14 - 5WP57123 RED  
REAR REFLECTOR

15 - 5WP19924

**⚠ WARNING**

**HIGH-PRESSURE HYDRAULIC OIL LEAKS CAN PENETRATE SKIN RESULTING IN SERIOUS INJURY, GANGRENE OR DEATH.**

- Check for leaks with cardboard; never use hand.
- Before loosening fittings: lower load, release pressure, and be sure oil is cool.
- Consult physician immediately if skin penetration occurs.

19924-B

# OPERATION

The operator is responsible for the safe operation of the cutter. The operator must be properly trained. Operators should be familiar with the cutter, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on page 5 through page 12.

This mower is designed for lawn and grass mowing. It is not designed for rough conditions or heavy weed mowing. It is equipped with suction type blades for best results in lawn mowing.

Recommended mowing speed for most conditions is from 2 to 5 mph. Always operate power unit PTO at 540 rpm.

This section provides information for attaching the mower to the tractor and preparing it for field operation. Review this data prior to tractor hook-up and operation.

Lower mower to the ground when not in use.

## DANGER

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

## WARNING

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

- Never allow riders on power unit or attachment.
- Never allow children or untrained persons to operate equipment.

## WARNING

- Keep bystanders away from equipment.

■ Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

■ Operate tractor PTO at 540 RPM. Do not exceed.

## CAUTION

■ Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## ATTACHING MOWER TO TRACTOR

### WARNING

■ Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

■ Make sure shields and guards are properly installed and in good condition. Replace if damaged.

■ Never attach the mower release rope to the operator, the operator's clothing, or the tractor seat.

1. Park mower and tractor on a level, hard-surfaced area.
2. Adjust tractor hitch bracket on trailer frame so the trailer is level when attached to the tractor. Pin the mower to the tractor.

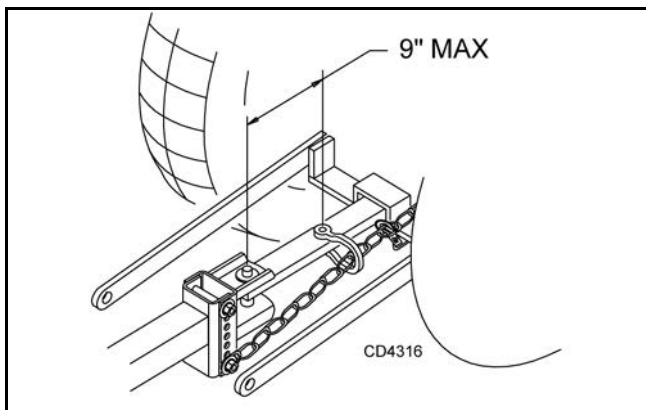
**NOTE:** When attaching mower to tractor drawbar, make sure the correct drawbar pin is used. A Category 1 drawbar is 1"; Category 2 is 1.25". Failure to use the correct pin size will result in premature wear of hitch and drawbar hole. If the hitch on the mower doesn't match your tractor drawbar, contact your dealer to order the correct size hitch for your tractor. If mower will be attached to tractor for a long period of time, secure hitch to drawbar using a bolt, locknut, and washers assembled tightly. This will reduce wear on drawbar and hitch.

A 1-3/8" 6B spline PTO shaft is used for connecting the mower to the tractor. This mower is designed for 540 rpm PTO only.

The PTO drive shaft is intended for use with tractors that have 14 inches between the end of the PTO shaft and the tractor's drawbar hitch pin hole.

3. Attach the safety chain to the tractor as shown in Figure 1.
4. Attach the mower drive shaft to tractor PTO. Make sure the lock collar engages securely.
5. Attach the end of the mower's transport lock release rope to a location on the tractor within easy reach of the operator.

**NOTE:** When routing the rope, do not route through the hydraulic hose guide and do not allow rope slack to drop between the driveline shields and the gearbox rotating shafts.



**Figure 1.** Tow Chain Installation

### Attaching Hydraulic Hoses

1. Attach the hydraulic hose from the mower to the tractor.
2. Route the hose through the hose guide of the trailer frame and be sure the hose can slide freely in the guide. Do not allow hose slack to drag on the ground or become caught on tractor protrusions.
3. From the operator position, start the tractor, raise and lower the wings, and the rear deck several times. This will purge the hydraulic cylinders and hoses of trapped air.

### Interference Check

1. Be sure that the tractor 3-point arms do not interfere with hydraulic hoses, driveline or mower frame.
2. Check for straight ahead operation and full turning angles. If there is any interference, remove the 3-point arms.

**NOTE:** Contact between 3-point arms and mower can cause damage, especially when turning.

## CV Driveline Turning Limits

### NOTICE

■ Do not exceed turning angle of 80 degrees at the head of the Constant Velocity (CV) driveline or damage will occur.

Check for excessive turn angle:

1. Disconnect the driveline from the tractor.
2. Start engine and turn as far right or left as possible.
3. Shut off the engine and connect the CV driveline to the tractor. If it cannot be connected, the turn angle is too severe.
4. Restart the tractor and straighten the angle slightly.
5. Shut off the engine and connect the CV driveline to tractor.
6. Repeat the process until the driveline can be connected. The point at which the driveline can be connected is the maximum turn that can be made.

### Leveling Mower

**NOTE:** To ensure satisfactory mower performance, the trailer frame and decks must be leveled before operating the mower. During normal operation, the mower should be leveled twice each season. The mower must be leveled each time a tractor with a different drawbar height is used.

Follow this procedure to level the mower for operation:

1. Park the tractor and mower on a flat level surface with the decks in mowing position.
2. Inflate all tires to the recommended pressure: 70 psi for trailer tires and 30 psi for deck gauge tires.
3. Level the trailer frame by adjusting the hitch. (See Figure 2.)
4. Remove the hitch clevis from the trailer frame and pin to the tractor drawbar.
5. Use the parking jack to adjust the trailer frame to the level position. Align the nearest hitch adjustment hole in the hitch clevis with a hole in the trailer frame.
6. Tighten the hardware to specifications in the Bolt Torque Chart on page 61. Readjust the level of the frame each time the drawbar height changes.
7. Attach the mower and the driveline to the tractor. Level the driveline by placing a bolt through the carrier bearing and the driveline height adjustment holes.

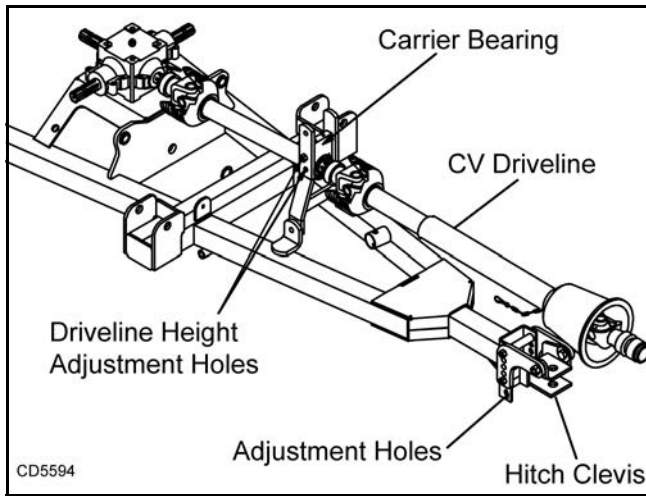


Figure 2. Level Trailer Frame

## CUTTING HEIGHT ADJUSTMENT

### **WARNING**

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

■ Before working underneath, carefully read Operator's Manual instructions, disconnect driveline, raise mower, securely block up all corners with jackstands, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failures, or mechanical component failures.

### **NOTICE**

■ Avoid low cutting heights. Striking the ground with blades produces one of the most damaging shock loads a mower can encounter. Allowing blades to contact ground repeatedly will cause damage to mower and drive.

1. Level mower from side to side. Check by measuring from mower frame to the ground at each deck rail.
2. Verify that the same amount of spacers are under all caster arms.
3. Loosen cap screws that attach caster arm assembly to deck.

4. Set mower on the ground.
5. Retighten cap screws. This equalizes the clearance in the bolt holes.
6. Best mowing results will be obtained with front of mower level with, or slightly lower than, the rear.
7. Cutting height is controlled with front and rear caster wheel adjustment.
8. To raise rear of mower, move caster adjustment spacers under caster arms.
9. To raise front of mower, move spacers under front caster wheel arms.

Remember, measurement at location A (Figure 3) should not be less than location B and should not be over 1/2" greater than location B

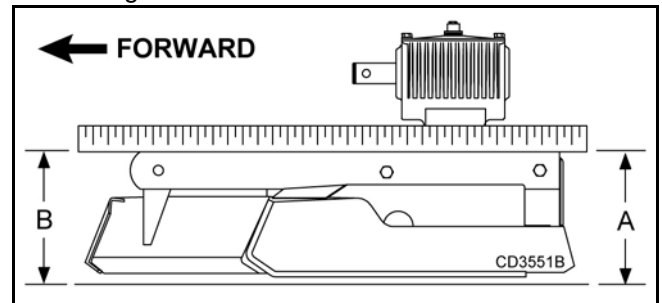


Figure 3. Cutting Height Adjustment

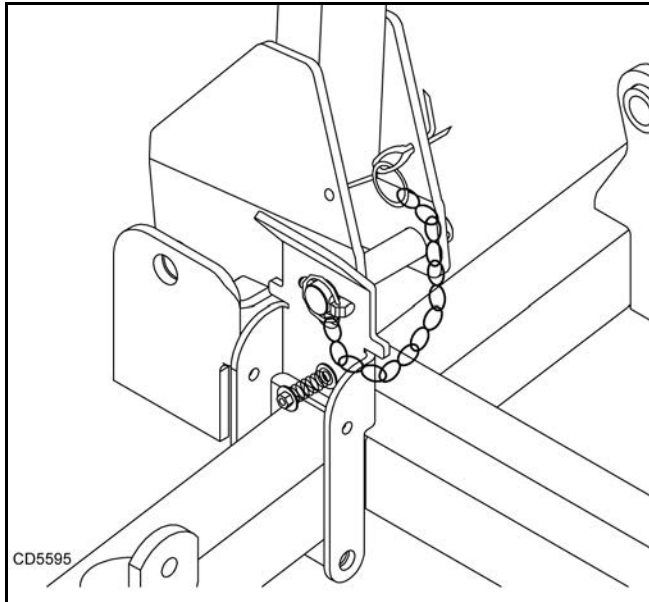
Table 1: Cutting Height Chart

Cut Height	Spacers Required Under Caster Arm Pivot Tube		
	1/2" Spacer	3/4" Spacer	1 Spacer
1"			
1-1/2"	1		
2"			1
2-1/2"	1		1
3"			2
3-1/2"	1		2
4"	1	2	1
4-1/2"		2	2
5"	1	2	2

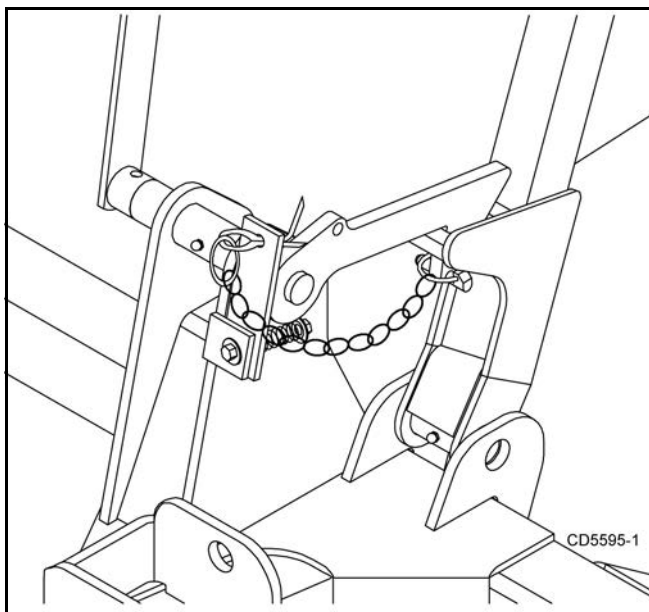
## **TRANSPORT**

When transporting the mower short distances, raise the wings and the rear deck until all three transport locks engage automatically.

Install locking pins to secure the mower wings for transport as shown in Figure 4 and Figure 5.



**Figure 4.** Lock Pin Installed (Right Wing)



**Figure 5.** Lock Pin Storage Installed (Rear Deck)

To lower the wings and the rear deck:

1. Remove the locking pins and store in holes provided.
2. Slightly raise the wings and rear deck to take pressure off the locking mechanisms.

3. Pull the transport lock release rope to disengage the locks. Lower the wings and rear deck and release the rope.

## **STARTING AND STOPPING MOWER**

### **⚠ WARNING**

- Do not operate PTO during transport.
- Never direct discharge toward people, animals, or property.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.

### **⚠ CAUTION**

- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.

### ***NOTICE***

- Stopping the mower with belt in contact with a very hot pulley will bake and ruin belt.

Power for operating the mower is supplied from the tractor PTO. Refer to your tractor manual for instructions on engaging and disengaging the PTO.

Operate PTO at 540 rpm. Know how to stop tractor and mower quickly in case of an emergency.

If the mower becomes plugged causing the belt to slip for over two seconds, follow these steps:

1. Raise mower just enough to clear accumulated material.
2. Continue running at least two minutes, allowing pulleys to cool.

To reduce the risk of thrown objects, do not raise the mower higher than necessary

## **OPERATING**

### **⚠ WARNING**

- Do not operate mowers on terrain that raises mowers beyond 25 degrees. Exceeding this design limit will result in U-joint “knocking noise” and potential driveline failure and could cause driveline to pull apart.



When engaging the PTO, engine rpm should always be low. Once engaged and ready for mowing, increase PTO speed to 540 rpm and maintain speed throughout the cutting operation.

Mower vibration tends to loosen bolts. All hardware should be checked regularly to maintain proper torque. Each time the mower is used, check all hardware to be sure it is secure. Recommended torque values can be found on page 61.

The condition of the terrain will determine cutting results. For best results, mower blades should be kept sharp at all times and the platform as level as possible. When mower blades show excessive wear, they should be replaced.

## Operating Technique

### CAUTION

■ **Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.**

Proper ground speed will depend upon the terrain, the height, type, and density of material to be cut.

Normally, ground speed will range from two to five mph. Tall dense material should be cut at a low speed; thin medium-height material can be cut at a faster ground speed.

Always operate tractor PTO at 540 rpm to maintain proper blade speed and produce a clean cut.

Under certain conditions, tractor tires may roll some grass down and prevent it from being cut at the same height as the surrounding area. When this occurs, reduce your ground speed, but maintain PTO at 540 rpm. The lower ground speed will permit grass to partially rebound.

In general, lower cutting heights give a more even cut with less tendency to leave tire tracks. However, it is better to cut grass frequently rather than too short. Short grass deteriorates rapidly in hot weather and invites weed growth during growing seasons. Follow local recommendations for the suitable cutting height in your area.

## Operating Tips

### WARNING

■ **Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.**

Extremely tall material should be cut twice. Set mower at a higher cutting height for the first pass. Then cut at desired height 90 degrees to the first pass.

Remember, sharp blades produce cleaner cuts and require less power.

Analyze area to be cut to determine the best procedure. Consider height and type of grass and terrain type: hilly, level, or rough.

## Uneven Terrain

### WARNING

- **Do not operate or transport on steep slopes.**
- **Do not stop, start, or change directions suddenly on slopes.**
- **Use extreme care and reduce ground speed on slopes and rough terrain.**
- **Watch for hidden hazards on the terrain during operation.**

In extremely uneven terrain, rear wheel weights, front tractor weights and/or front tire ballast should be used to improve stability.

Pass diagonally through sharp dips and avoid sharp drops to prevent “hanging up” the tractor and the mower. Practice will improve your skills in maneuvering rough terrain.

Avoid sudden starts and stops when traveling up or down hill.

Always mow down slopes, never up or across the face. Avoid operating on steep slopes.

Slow down on sharp turns and slopes to prevent tipping and losing control.

## REMOVING MOWER FROM TRACTOR

1. Park the unit on a level, hard surface with the wings and rear deck fully lowered to the ground.
2. Block the wheels to keep the mower from rolling when unhitched from tractor.
3. Attach the jack to the side of the tongue and adjust the height to take the weight off the tractor hitch.
4. Disconnect the PTO shaft and the hydraulic hose, untie the mower transport lock release rope from the tractor, and remove the hitch pin.
5. Store the PTO shaft end and the hydraulic hose couplings off the ground and keep them clean.

## PRE-OPERATION CHECK LIST (OWNER's RESPONSIBILITY)

## NOTES

- \_\_\_ Review and follow all safety rules and safety decal instructions on pages 5 through 12.
- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Check that all shields and guards are properly installed and in good condition. Replace if damaged.
- \_\_\_ Check that chain shielding is in good condition and replace any damaged chain links.
- \_\_\_ Check that all hardware and cotter pins are properly installed and secured.
- \_\_\_ Check to ensure blades are sharp, in good condition, and installed correctly. Replace if damaged.
- \_\_\_ Check that equipment is properly and securely attached to tractor.
- \_\_\_ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- \_\_\_ Make sure the driveline guards and tether chains are in good condition. Guards must rotate freely on driveline. Fasten tether chains as instructed to the tractor and the equipment.
- \_\_\_ Inspect area and remove stones, branches or other hard objects that might be thrown, causing injury or damage.
- \_\_\_ Do not allow riders.
- \_\_\_ Check all lubrication points and grease as instructed in Lubrication Information, page 20. Make sure the PTO slip joint is lubricated and that the gearbox fluid levels are correct.
- \_\_\_ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately.
- \_\_\_ Make sure tractor ROPS or ROPS cab and seat belt are in good condition. Keep seat belt securely fastened during operation.
- \_\_\_ Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.

# OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual

## **! DANGER**

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

## **! WARNING**

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

■ Do not disconnect hydraulic lines until engine is stopped, power unit is properly secured, equipment and all components are lowered to the ground, and system pressure is released by operating all valve control levers.

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

## **! CAUTION**

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## **BLOCKING METHOD**

The only approved blocking devices for this mower are jack stands with a load rating of 1,000 pounds or more. Twelve jack stands, located as shown in Figure 6, must be installed before working underneath this unit.

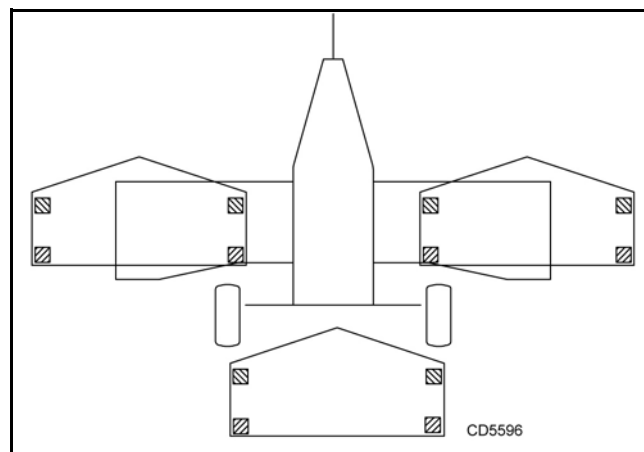


Figure 6. Jackstand Placement

Do not work underneath mower unless it is properly attached to tractor and blocked securely. When properly attached, the unit will be anchored to minimize front to rear movement.

Before blocking, be sure that the mower is securely attached to the tractor. Lower mower units to the ground. Raise the mower units as needed for working room and securely block them. Set tractor brakes, turn engine off and remove key, then disconnect mower driveline.

When blocking, you must consider the overall stability of the unit. Just placing jackstands under the unit will not ensure your safety. The working surface must be level and solid to support the loaded weight of the jack stands. Ensure that jackstands are stable at both top and bottom. Before working under any portion of the mower, test the stability of your blocking with the full weight of the mower units lowered onto the jackstands.

## LUBRICATION INFORMATION

### CAUTION

■ **When lubricating telescoping PTO drives, keep fingers out of shield access slots to prevent injury.**

Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

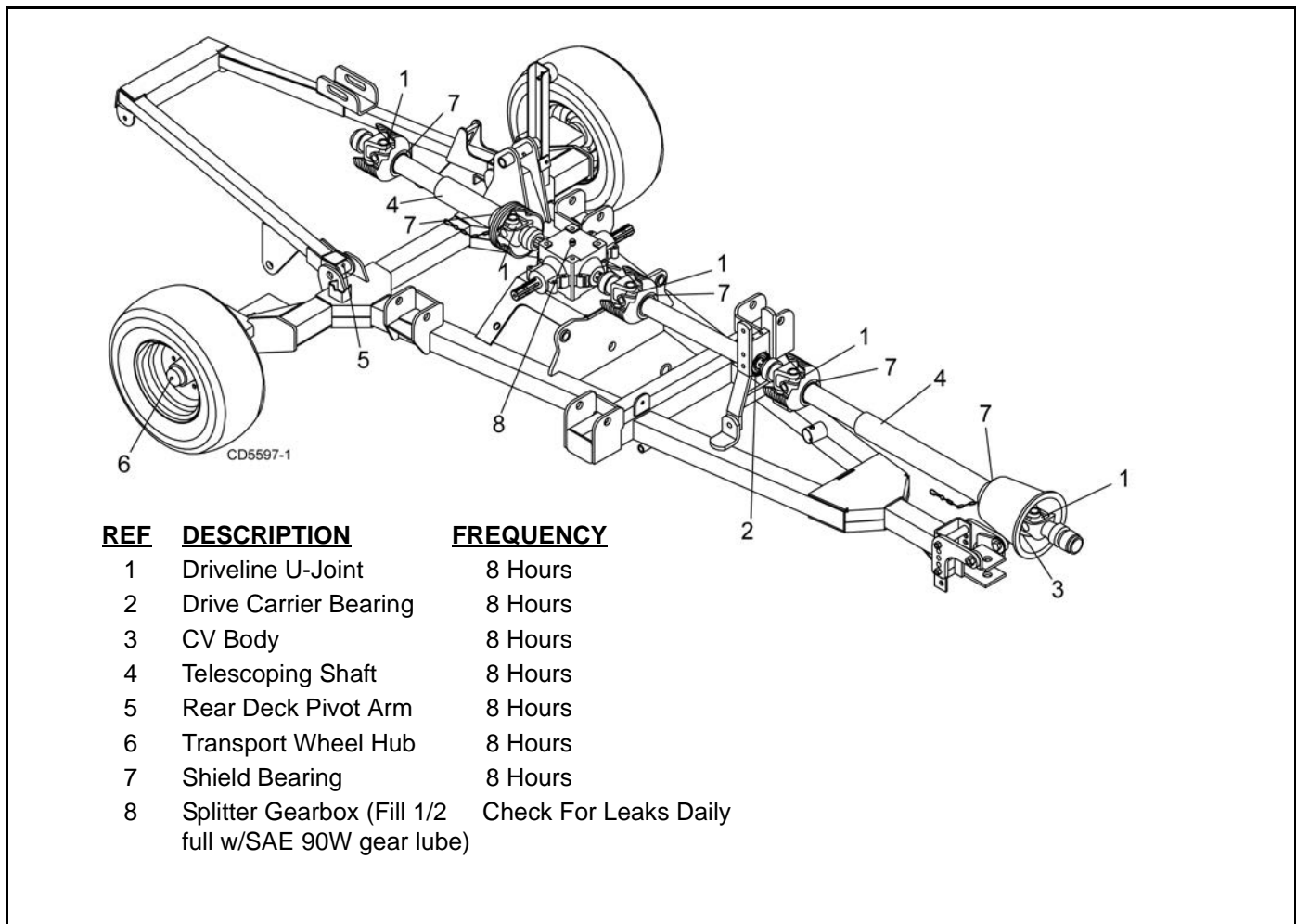
Figure 7 and Figure 8 shows lubrication points. The accompanying charts give the frequency of lubrication in operating hours, based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted.

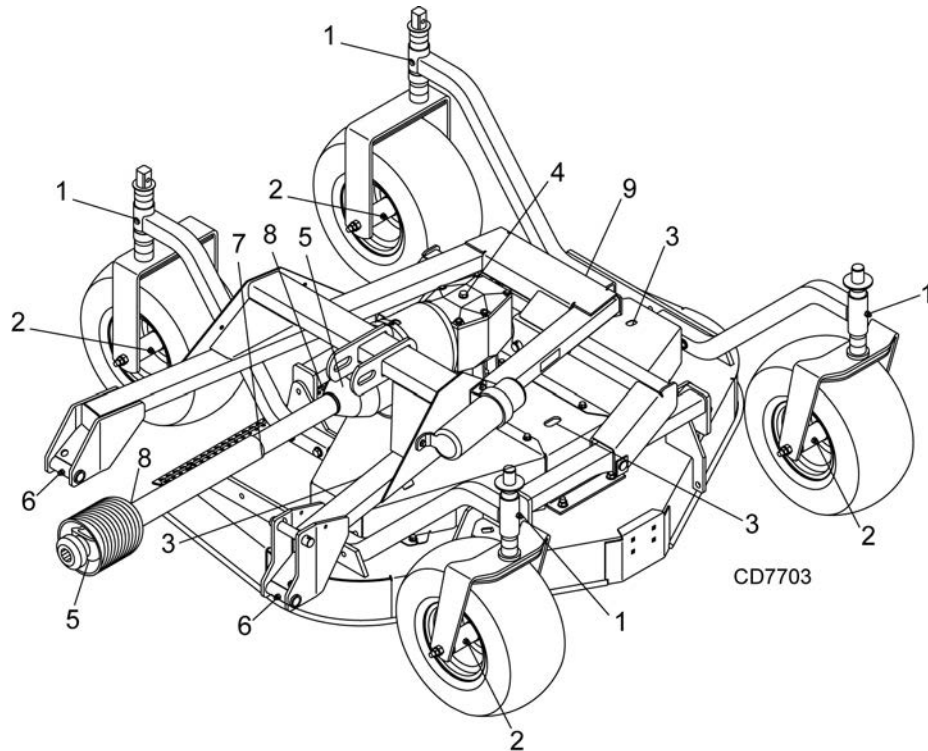
Be sure to clean fittings thoroughly before attaching grease gun. When applied according to the lubrication chart, one good pump of most guns is sufficient. Use SAE 90W gear lube in gearboxes.

Daily lubrication of PTO slip joints is necessary. Failure to maintain proper lubrication can result in damage to U-joints, gearboxes and/or drive shafts. Raise or lower mower until grease fittings in PTO shields are exposed. Insert grease gun through slots and apply grease to all sides of shafts. Always stand clear of mower and wing arm mechanism to avoid being pinched or crushed should the mower or wing suddenly lower.

Raise and lower mower after applying grease so that it spreads over the slip joint working area.



**Figure 7.** Lubrication Points - Trailer



<b>REF</b>	<b>DESCRIPTION</b>	<b>FREQUENCY</b>
1	Caster Wheel Pivots	8 Hours
2	Caster Wheel Hubs	8 Hours
3	Blade Spindles	24 Hours
4	Gearbox (Fill 1/2 full with SAE 90W gear lube)	Check For Leaks Daily
5	Driveline U-Joints	8 Hours
6	Wing Pivots	8 Hours
7	Telescoping Shaft	8 Hours
8	Shield Bearing	8 Hours
9	Deck Pivot	8 Hours

**Figure 8.** Lubrication Points - Deck

## **BELT SERVICE**

### **Belt Replacement**

One of the major causes of belt failure is improper installation. Before installing a new belt, check the following:

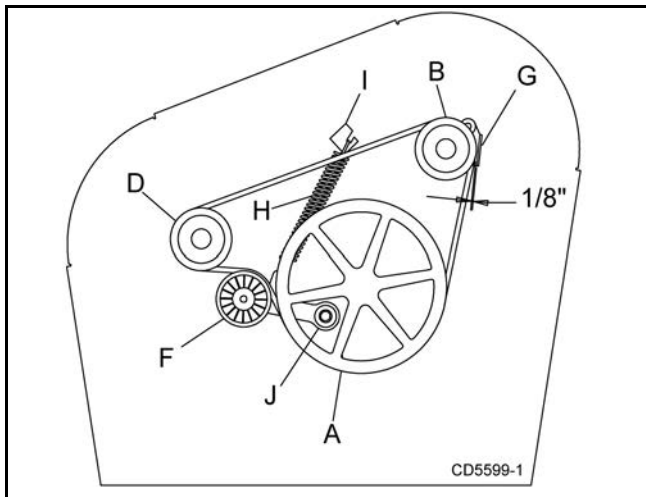
1. Check pulley shafts and bearings for wear.
2. Check pulley grooves for cleanliness.
3. Make sure spindles turn freely and without wobble.

If grooves require cleaning, moisten a cloth with a non-flammable, non-toxic degreasing agent or commercial detergent and water.

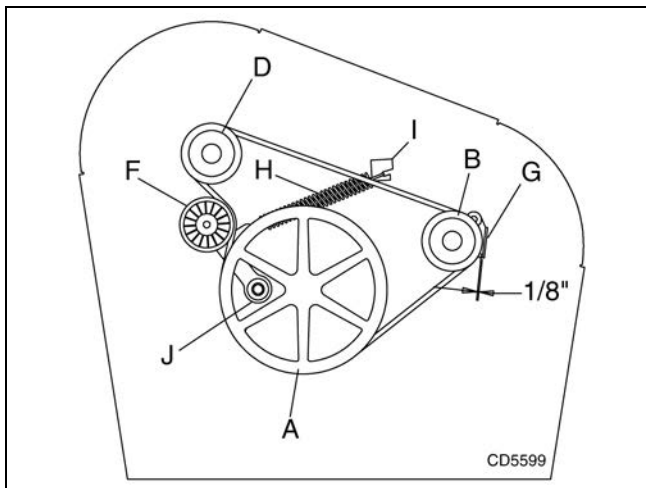
Avoid excessive force during installation. Do not use tools to pry belt into pulley groove. Do not roll belt over pulleys to install. This can cause hidden damage and premature belt failure.

### **Belt Installation**

#### **Wing Deck - FM1012 (Figure 9 & Figure 10)**



**Figure 9.** Belt Routing Right Wing FM1012



**Figure 10.** Belt Routing Left Wing FM1012

## **⚠ CAUTION**

■ **Use care when installing or removing belt from spring-loaded idler. Springs store energy when extended and, if released suddenly, can cause personal injury.**

4. Slide belt under drive pulley A and over idler arm. Position the belt around drive pulley A.
5. Loosen the bolt holding belt guide G and swing it away from pulley B. Route the belt around pulley D as shown.
6. Make sure the belt is on drive pulley A; route around idler F.
7. Grasp the belt between spindle pulley B and spindle pulley D. Drive pulley A. Pull spring loaded idler with belt to obtain enough belt length to route it over pulley B. Make sure spring loaded idler pivots freely with belt installed.
8. Adjust belt guide G to provide 1/16" to 1/8" clearance from belt. Tighten the bolt to 85 lbs./ft.

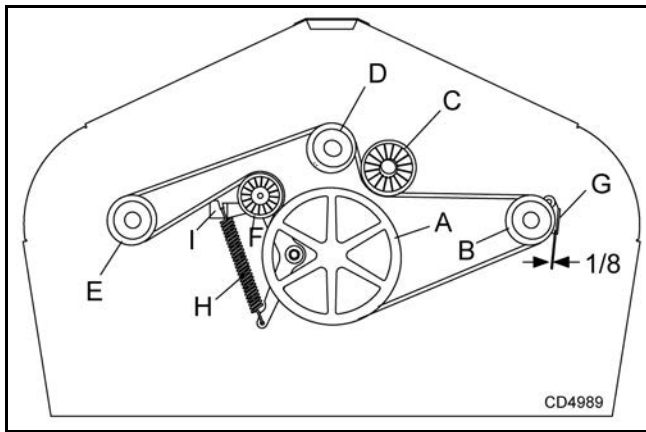
#### **Rear Deck - FM1012**

#### **All Decks - FM1015 & FM1017(Figure 11)**

## **⚠ CAUTION**

■ **Use care when installing or removing belt from spring-loaded idler. Springs store energy when extended and, if released suddenly, can cause personal injury.**

1. Slide the belt under drive pulley A and over idler arm. Position the belt around drive pulley A.
2. Loosen the bolt holding belt guide G and swing it away from pulley B. Route the belt around pulley B, idler C, and pulley D as shown.
3. Make sure the belt is on drive pulley A; route around idler F.
4. Grasp the belt between spindle pulley E, spring loaded idler F, and spindle pulley D. Pull spring loaded idler with belt to obtain enough belt length to route it over pulley E. Make sure spring loaded idler pivots freely with belt installed.
5. Adjust belt guide G to provide 1/16" to 1/8" clearance from belt. Tighten bolt to 85 lbs-ft.



**Figure 11.** Belt Routing - FM1015 & FM1017 All Decks & FM1012 Rear Deck

## **BLADE SERVICING**

### **! WARNING**

- Before servicing blades, raise and lock mower in transport position, turn off engine, set parking brake and remove key.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.

### **! CAUTION**

- Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.

1. Raise mower decks to the transport position and make sure transport locks are engaged.
2. Shut off tractor, relieve hydraulic pressure in cylinders, set parking brake and remove key.
3. Inspect blades before each use to determine that they are mounted securely and are in good condition.
4. Replace any blade that is bent, excessively nicked, worn, or has any other damage.
5. Small nicks can be ground out when sharpening.

## **BLADE REMOVAL**

### **! WARNING**

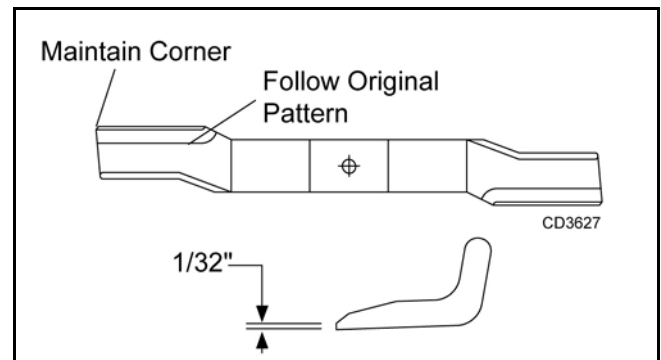
- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
1. Remove cap screws (3) & lock nut (4), Figure 12.
  2. Remove blade.

## **BLADE SHARPENING**

### **NOTICE**

- When sharpening blades, be sure to balance them. Unbalanced blades will cause excessive vibration that can damage blade spindle bearings. Vibration may also cause structural cracks in mower housings.

1. Remove blades.
2. Always sharpen both ends to maintain balance.
3. Follow original sharpening pattern.
4. Do not sharpen blade to a razor edge. Leave from 1/32" to 1/16" blunt edge.
5. Do not sharpen back side.



**Figure 12**

## **BLADE INSTALLATION**

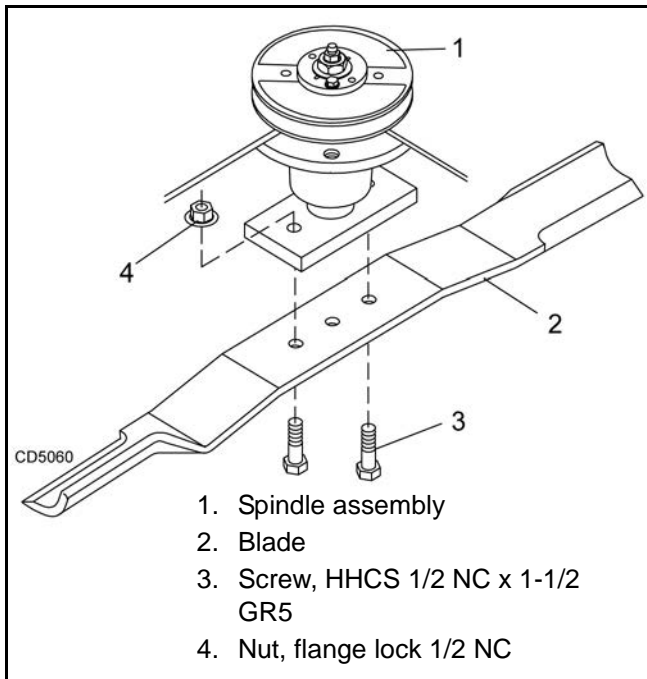
### **! CAUTION**

- Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.

### **NOTICE**

- When installing blade, the lift of the blade must be toward the spindle blade housing as shown in Figure 12.

1. Place cap screws (3) through outer holes in blade and spindle shaft.
2. Make sure blade cutting edge is positioned to lead in a clockwise rotation, as viewed from top of mower.
3. Place locknuts (4) on screws and torque to 84 lbs-ft.



## Periodically or Before Extended Storage

- Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Remove the remainder using a low-pressure water spray.
  1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
  2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
  3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.
- Inspect machine and replace worn or damaged parts.
- Sand down scratches and the edges of areas of missing paint and coat with Woods spray paint of matching color (purchase from your Woods dealer).
- Replace any safety decals that are missing or not readable (supplied free by your Woods dealer). See Safety Decals section for location drawing.

## CLEANING

### After Each Use

- Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Remove belt shields and clean out all accumulated grass, dirt and other debris.
- Inspect machine and replace worn or damaged parts.
- Replace any safety decals that are missing or not readable.



# TROUBLESHOOTING

## MOWING CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Grass cut higher in center of swath than at edge	Height of mower higher at front than at rear	Adjust mower height and attitude so that mower rear and front are within 1/2 inch of same height. See instructions on page 15.
	Loose Blade	Check blade hardware.
Grass cut lower in center of swath than at edge	Height of mower lower at front than at rear	Adjust mower height and attitude so that mower rear and front are within 1/2 inch of same height. See instructions on page 15.
	Loose Blade	Check blade hardware.
Streaking conditions in swath	Conditions too wet for mowing	Allow grass to dry before mowing.
	Blades unable to cut that part of grass pressed down by path of tractor tires	Slow ground speed of tractor but keep engine running at full PTO rpm. Cutting lower will help. Adjust tractor tire spacing if possible.
	Dull blades	Sharpen or replace blades.
	Loose Blade	Check blade hardware.
Material discharges from mower unevenly; bunches of material along swath	Material too high and too much material	Reduce ground speed but maintain 540 rpm at tractor PTO, or make two passes over material. Raise mower for the first pass and lower for the second and cut 90 degrees to first pass. Raise rear of mower high enough to permit material discharge.
	Grass wet	Allow grass to dry before mowing. Slow ground speed of tractor but keep engine running at full PTO rpm.

# TROUBLESHOOTING

## BELT CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Belt slippage	Mower overloading; material too tall or heavy	Reduce tractor ground speed but maintain full PTO rpm. Cut material twice, one high pass and then mow at desired height. Cut 90 degrees to first pass.
	Oil on belt from over-lubrication	Be careful not to over-lubricate. Clean lubricant from belt and pulleys with clean rag. Replace oil-soaked belt.
	Belt hung up or rubbing	Check belt position in pulleys and idlers. Check belt for free travel in pulleys. Check under mower and around blade spindle shaft for wire, rags, or other foreign material. Clean all material from under mower.
Frayed edges on belt cover	Belt misaligned	Re-align belt. Be sure belt does not rub any other part while running.
	Pulley misaligned	Inspect to ensure belt is running in center of backside idler. Shim idler as necessary to align.
Belt rollover	Pulley misaligned	Re-align.
	Damaged belt	Replace belt*.
	Foreign object in pulley groove	Inspect all pulley grooves for rust, paint, or weld spots and remove.
	Worn pulley groove	Replace pulley.
Damaged belt	Rollover, high shock loads or installation damaged	Replace belt*.
Belt breakage	High shock loads	Avoid abusive mowing. Avoid hitting the ground or large obstructions.
	Belt came off drive	Check pulleys for foreign material in grooves. Avoid hitting solid objects or ground.

\* Check belt for damage by laying it flat on the floor. A belt that does not lie flat (has humps or twists, indicating broken or stretched cords) must be replaced.

# DEALER SERVICE

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

## WARNING

■ Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

## CAUTION

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## BLOCKING METHOD

NOTE: SEE BLOCKING METHOD, PG. 19

## BLADE SPINDLE SERVICE

### Spindle Repair

Spindle repair requires special skills and tools. If your shop is not properly equipped or your mechanics are not trained in this type of repair, you may be time and money ahead to use a new spindle assembly.

For reference, the grease fitting is in the top of the spindle shaft.

Permatex<sup>®</sup> 3D Aviation Form-A-Gasket or equivalent is recommended as a sealant

### Spindle Removal (Figure 13)

1. Remove blade from spindle.
2. Remove belt from pulleys.
3. Remove jam nut (1) and washer (3) from top of spindle shaft.

1. Permatex is a registered trademark of the Permatex Corporation.

4. Disassemble split taper bushing (5) (located on top of pulley) by removing the two bolts (2) and washers (4).
5. Insert bolts (2) into the threaded holes of bushing flange.
6. Tighten bolts alternately to remove split taper bushing.
7. Remove pulley (6).
8. Remove bolts (19) that attach spindle to mower frame and remove spindle.
9. Remove grease fitting (21) from top of shaft.

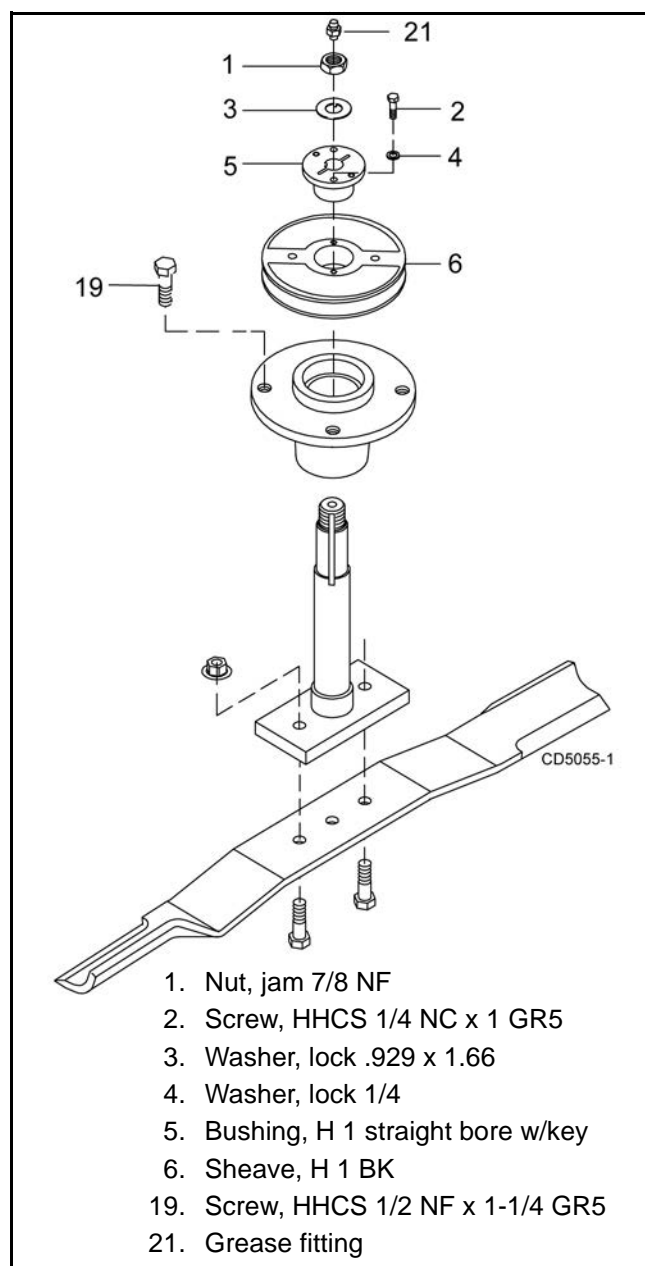


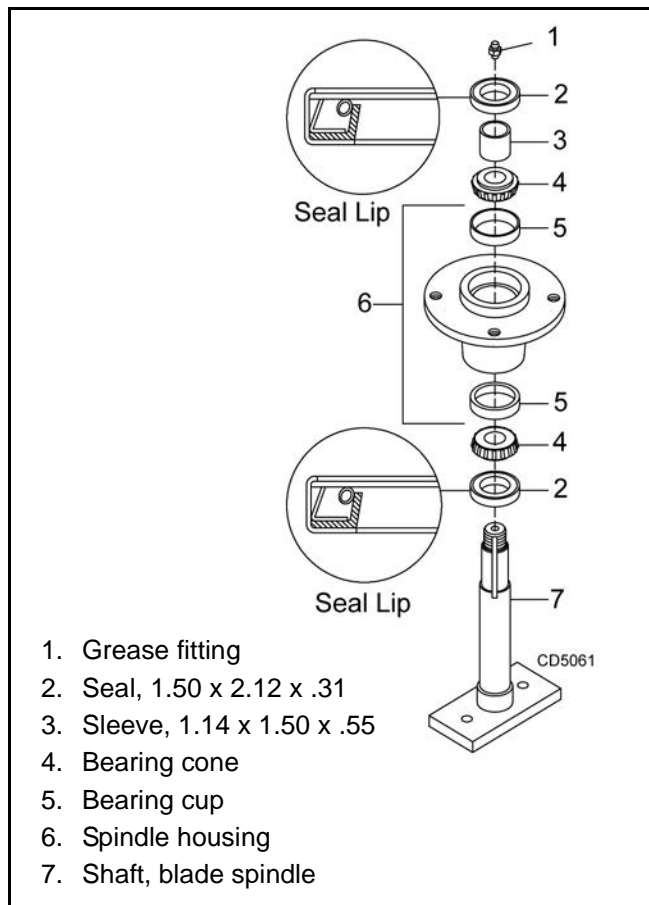
Figure 13. Sheave and Blade Assembly

## Spindle Disassembly

1. Place spindle assembly in press and press shaft down through housing.
2. Remove seals from housing.
3. Remove bearing cups from housing by placing a punch in the slots provided and driving them out. Alternate punch positions from side to side. Take care to prevent housing damage.

## Spindle Assembly (Figure 14)

■ **Improper positioning of seals can cause seal damage. An improperly installed seal will leak and could cause bearing failure.**



**Figure 14.** Spindle and Shaft Assembly

Bearing cones and cups are designed to work together. It is important to position them so bearing cone taper mates with cup taper.

1. Lubricate new cups with a light oil. Place them in spindle housing so they will mate with bearing cones. Cups and cones are a press fit to minimize wear.
2. Seat cups securely with a press or place a large drift in the flat lip and drive them into housing until cup seats against machined shoulder of housing.

3. Place bottom bearing cone into spindle with taper positioned to mate with cup.
4. Identify the open side of the seal containing the spring.
5. Apply a thin coat of Permatex to the area of housing where seals seat.
6. Install bottom seal with spring up toward center of housing.
7. Place seal squarely on housing and select a piece of pipe or tubing with an OD that will set on outside edge of seal. A tubing with an OD that is too small will bow seal cage.
8. Carefully press seal into housing to prevent distortion to metal seal cage. Bottom seal should seat firmly and squarely against machined shoulder in housing.
9. Make sure seal lip did not roll under. Distortion to seal cage or damage to seal lip will cause seal to leak. Damaged seals must be replaced.
10. Insert shaft and bearing through bottom of housing.
11. Fill housing cavity with a medium grade grease.
12. Install top bearing on shaft to mate with top cone.
13. Apply a thin coat of Permatex to shaft area where sleeve will seat.
14. Install sleeve on shaft and press sleeve and bearing into housing until all free play is removed and there is a very light drag on bearings (similar to adjusting front wheel bearings on an automobile). Check by spinning spindle. It should turn freely.
15. Be careful not to overtighten bearings. Proper bearing adjustment is essential to good bearing life.
16. If you overtighten bearings, hold spindle housing and rap spindle shaft with a lead hammer.
17. Carefully press top seal in with spring up. Top seal should be flush with or to within 1/16" above the housing.
18. Rotate housing on spindle shaft, checking for free movement.
19. Install grease fitting in spindle shaft.

## Spindle Installation

### NOTICE

■ Pulley installation sequence is very important for bearing life. Follow the sequence exactly.

1. Install spindle through bottom of mower and secure with four mounting bolts.
2. Install pulley and split taper bushing with integral key on spindle shaft. Make sure bushing is in contact with sleeve on spindle shaft.
3. Alternately tighten split taper bushing cap screws to 12 lbs.-ft.
4. Install toothed lock washer and nut on spindle shaft. Tighten nut until snug. Do not tighten this nut with wrench. Bearing damage will result from over-tightening. Bend up edge of lock washer.

## GEARBOX SERVICE

### Gearbox Removal from Mower (Figure 15)

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove vent plug and siphon gear lube from housing through this opening.
3. Remove gearbox stand (20) from mower deck by removing four flanged lock nuts (56).
4. Remove four cap screws (43) and washers (42) and remove shield (22) from gearbox.
5. Remove castle nut and hardware from output shaft of gearbox.
6. Remove sheave (19) from gearbox.
7. Remove four bolts (63) and lock nuts (59) that attach gearbox to gearbox stand and remove gearbox.

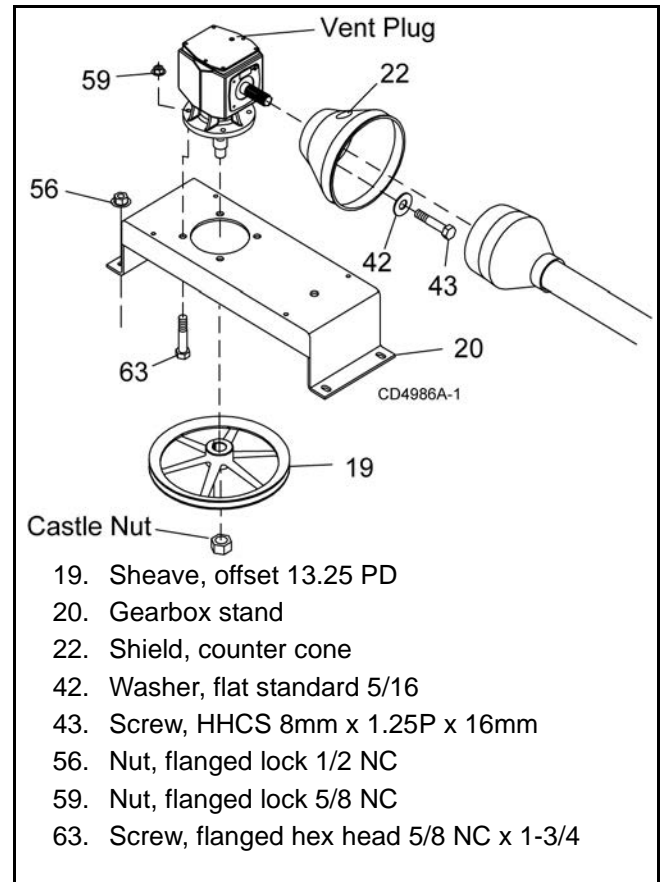


Figure 15. Gearbox Stand Assembly

### Gearbox Repair

Read this entire section before starting any repair. Many steps are dependent on each other.

Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. It is more economical to purchase a complete gearbox if repair to anything other than replacement of bearings, seals or gaskets is required.

Inspect gearbox for leakage and bad bearings.

Leakage is a very serious problem and must be corrected immediately.

Bearing failure is indicated by excessive noise and side-to-side or end play in gear shafts.

### Seal Replacement

Recommended sealant for gearbox repair is Permatex Aviation 3D Form-A-Gasket or equivalent.

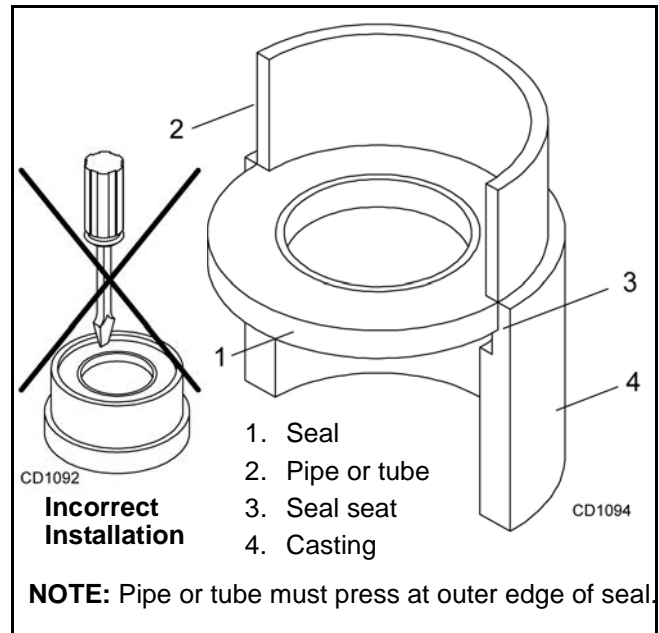
Leakage can occur at the vertical or horizontal gaskets and shaft seals.

Leakage at the horizontal gasket or seal can be repaired without removing the gearbox from the cutter.

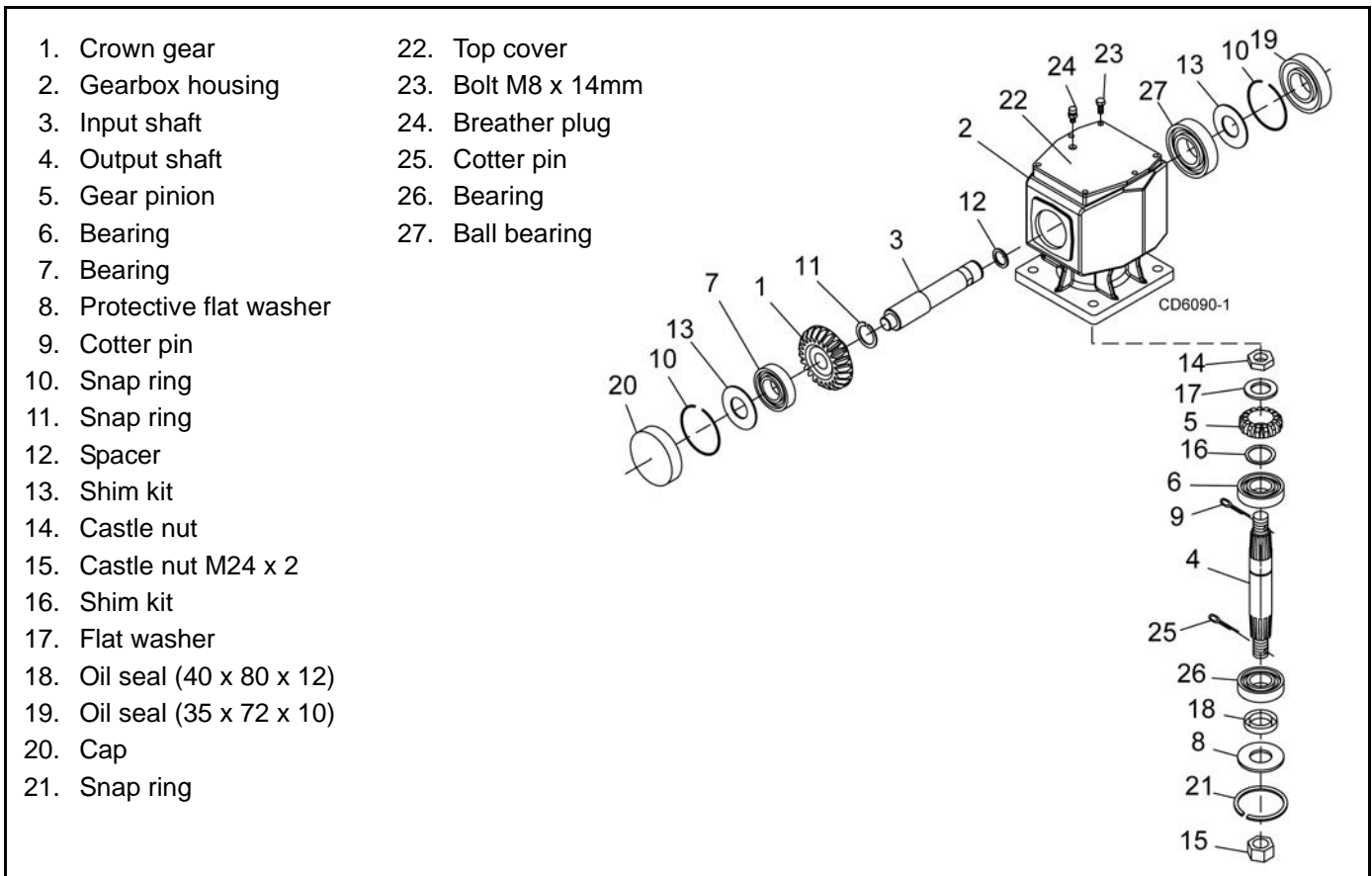
## Seal Installation

**NOTE:** Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex.
2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.
3. Lubricate gear shaft and seal lips.
4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal.
5. Carefully press seal into housing, avoiding distortion to the metal seal cage.



**Figure 16.** Seal Installation



**Figure 17.** Gearbox Assembly

## Vertical Shaft Repair (Figure 17)

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (24) and siphon gear lube from housing through this opening.
3. Remove gearbox stand from mower deck.
4. Remove gearbox and pulley from gearbox stand.

5. Remove vertical shaft seal (18). Replace with new seal (see Seal Replacement, page 29).

Vertical seal should be recessed in housing. Horizontal seal should be pressed flush with outside of housing.

**NOTE:** Distortion to seal cage or damage to seal lip will cause seal to leak.

6. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.
7. Assemble gearbox and pulley to gearbox stand. Attach gearbox stand to mower deck.

### Horizontal Leak Repair (Figure 17)

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (24) and siphon gear lube from housing through this opening.
3. If the leak occurred at either end of horizontal shaft, remove oil cap (20) and/or oil seal (19). Replace with new one (refer to Seal Replacement, page 29).
4. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.

### Gearbox Disassembly (Figure 17)

1. Remove top cover (22) from housing. Turn gearbox upside down and pour out remaining gear oil from gearbox.
2. Remove oil cap (20) (to be replaced).
3. Remove snap ring (10) and shim (13) from input shaft (3).
4. Support gearbox in hand press and push on input shaft (3) to remove bearing (7) and spacer (11).
5. Remove gear (1) from inside housing.
6. Remove oil seal (19) from front of housing (to be replaced).
7. Remove snap ring (10) and shim (13) from front of housing (2).
8. Remove input bearing (7) by using a punch and hammer from outside of housing.
9. Support housing in vise in a horizontal position.
10. The castle nut (15) and cotter pin (25) are already removed with the drive sheave. Remove the snap ring (21), washer (8), and seal (18).
11. Remove cotter pin (9), castle nut (14), and washer (8) from output shaft (4).
12. Remove output shaft (4) by using a punch and hammer and tap on top to drive down.
13. Remove gear (5) and shim (16) from inside housing.

14. Remove bearing (26) by using a punch and hammer from the top, outside the housing.
15. Support housing upside down (top cover surface) and remove bearing (6) by using a punch and hammer from the bottom side of the housing.
16. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
17. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
18. Inspect housing and caps for cracks or other damage.

### Gearbox Reassembly (Figure 17)

**NOTE:** Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert output bearings (6 & 26) in the housing, using a round tube of the correct diameter and a hand press.
4. Slide output shaft (4) through both bearings (6 & 26) until it rests against bearing (6).
5. Slide shim (16) over output shaft (4).
6. Press gear (5) onto output shaft (4) and secure with washer (17), castle nut (14), and cotter pin (9).
7. Apply grease to lower seal lips (18) and press seal over output shaft (4), using a tube of the correct diameter. Be sure not to damage the seal lip. Press in housing so that seal is recessed.
8. Insert protective washer (8) by hand. Install snap ring (21) and position it together with dual lip seal (18) by pressing it into position. Verify that snap ring is seated correctly.
9. Press bearing (7) into the housing, using a round tube of the correct diameter and a hand press. Secure with shim (13) and snap ring (10).
10. Secure snap ring (11) on input shaft (3) if not already secure.
11. Place gear (1) through top of housing and align gear (1) and gear (5) so that gear teeth are a match.

12. While holding gear (1) in place, slide input shaft (3) through gear (1) and bearing (7). Align splines on shaft (3) and gear (1).
13. Slide spacer (12) over input shaft (3) and press bearing onto input shaft (3), using a round tube of the correct diameter and a hand press.
14. Slide shim (13) over input shaft (3) and secure with snap ring (10).
15. Check input shaft end float by moving the input shaft (3) by hand. If end float is higher than 0.012", insert shim between input shaft (3) and rear bearing (7). Repeat until end float is less than 0.012". Check rotational torque by hand. The torque should be less than 2.2 lbs-inch.
16. Check that the gear backlash is between 0.006" and 0.016". You should not have to adjust the backlash.
17. Press in input oil seal (19), using tube of correct diameter. Be careful not to damage seal lip.
18. Press oil cap (20) on to cover the rear of housing, using a tube of the correct diameter.
19. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
20. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.

## Gearbox Installation

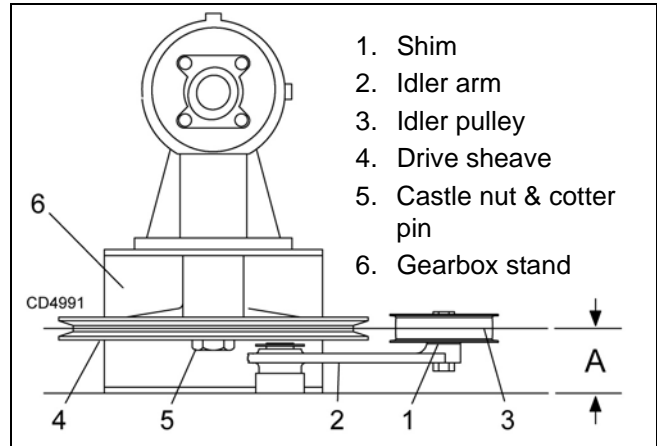
**NOTE:** Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Set gearbox on gearbox stand and fasten with bolts and nuts. Torque bolts to 175 lbs-ft.
2. Attach drive sheave to output shaft. Secure using castle nut and hardware previously removed.
3. Attach gearbox stand to mower using four flanged lock nuts.

## DRIVE SHEAVE INSTALLATION (FIGURE 18)

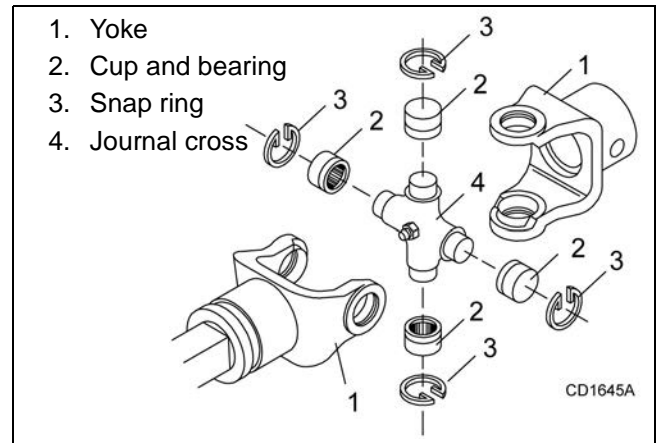
1. When gear stand is installed on mower, dimension A (from the top of the mower deck to the center line of the drive pulley) must be 2-7/16" ( $\pm 1/32$ "). This is a critical dimension and must be carefully adjusted for proper belt life. Add or subtract shim washers under idler pulley to align with drive pulley.
2. Tighten gear stand hardware.
3. Fill gearbox half full with SAE 90W gear lube.
4. Check level after waiting five minutes to permit lube to work through bearings. Add lube, if necessary, until gearbox is half full.

5. Replace driveline shield. Attach driveline to gearbox.



**Figure 18.** Drive Sheave Installation

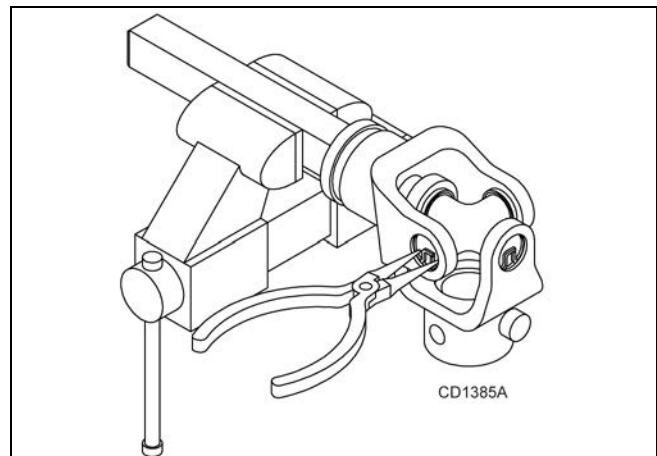
## UNIVERSAL JOINT REPAIR



**Figure 19.** U-Joint Exploded View

## U-Joint Disassembly

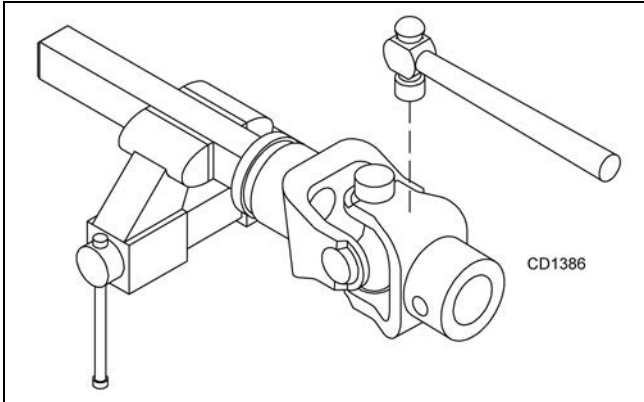
1. Remove external snap rings from yokes in four locations as shown in Figure 20.



**Figure 20**

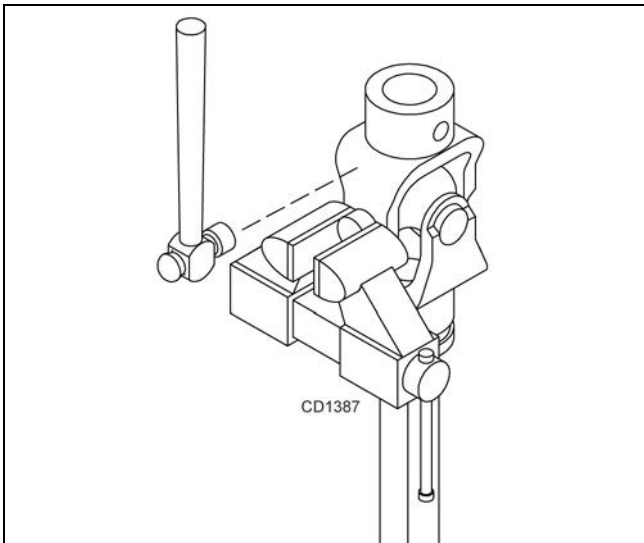


2. With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. See Figure 21.



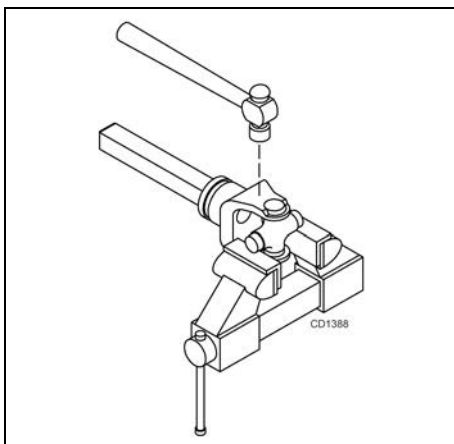
**Figure 21**

3. Clamp cup in vise as shown in Figure 22 and tap on yoke to completely remove cup from yoke. Repeat Step 2 and Step 3 for opposite cup.



**Figure 22**

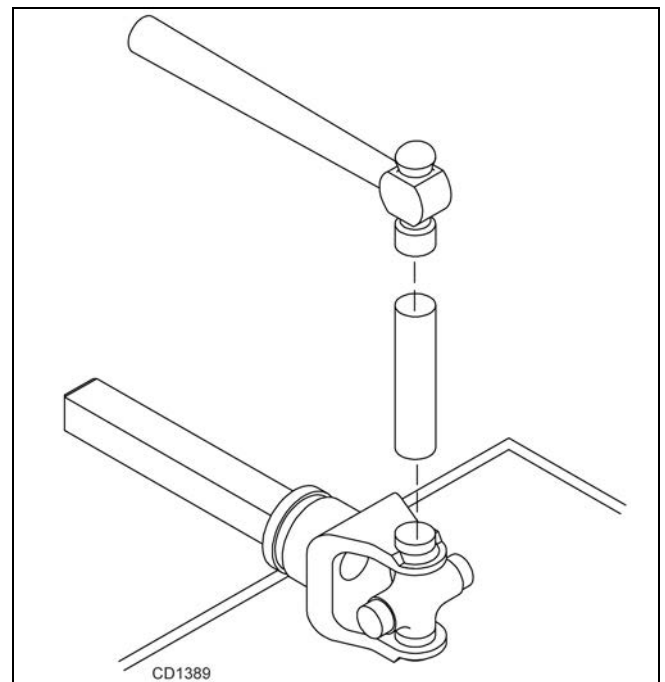
4. Place universal cross in vise as shown in Figure 23 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.



**Figure 23**

## U-Joint Assembly

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.
2. Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.
3. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 24. Install snap ring and repeat on opposite cup.
4. Repeat Step 1 and Step 2 to install remaining cups in remaining yoke.
5. Move both yokes in all directions to check for free movement. If movement is restricted, rap on yokes sharply with a hammer to relieve any tension. Repeat until both yokes move in all directions without restriction.



**Figure 24**

# ASSEMBLY INSTRUCTIONS

## DEALER SET-UP INSTRUCTIONS

The mower is shipped mostly assembled but requires dealer set-up. The Frontier dealer should deliver the mower to the owner completely assembled, lubricated, and adjusted for normal conditions.

Recommended torque values for hardware are located on page 61.

Complete check lists on page 38 when assembly is complete.

### **WARNING**

■ **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

### **CAUTION**

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

## REMOVE SHIPPING STRAPS

1. Remove front drive from between wing frames.
2. Attach to stub shaft (see trailer assembly).
3. Lift rear deck to take tension off rear lift chains.
4. Remove 3/8 bolts, washers, and nuts from both rear lift chains. See Figure 25. This hardware is for factory shipping purposes only and can be discarded.

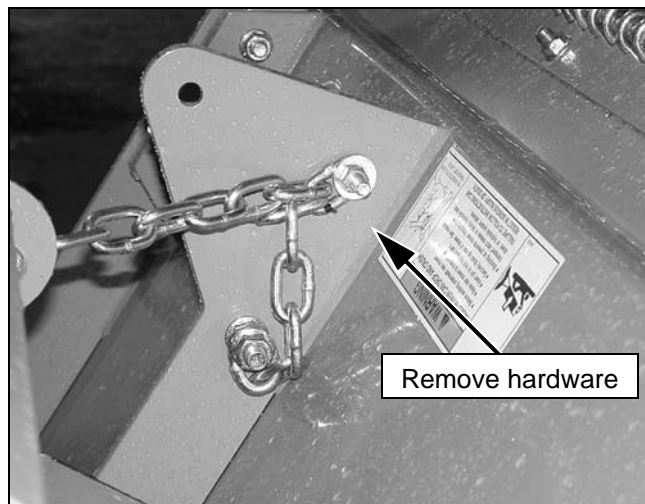


Figure 25. Remove Shipping Hardware

5. Gently lower deck until the deck is supported by the lift chains.
6. Remove 5/8 lock nuts and remove shipping strap from between right and left decks, Figure 26.

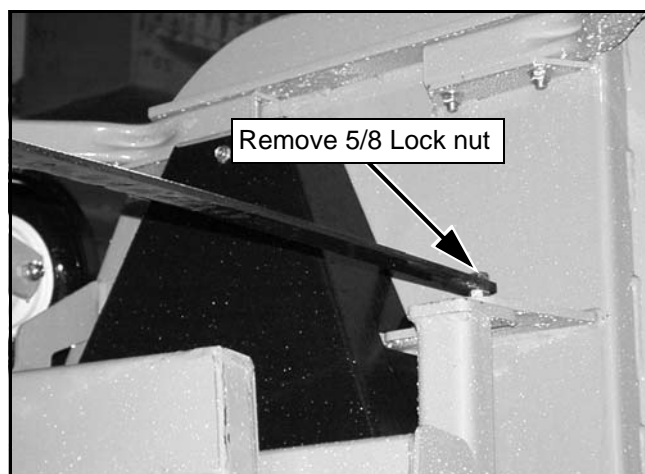


Figure 26. Remove Shipping Strap (Right Wing)

## ATTACH HYDRAULIC HOSES

### **WARNING**

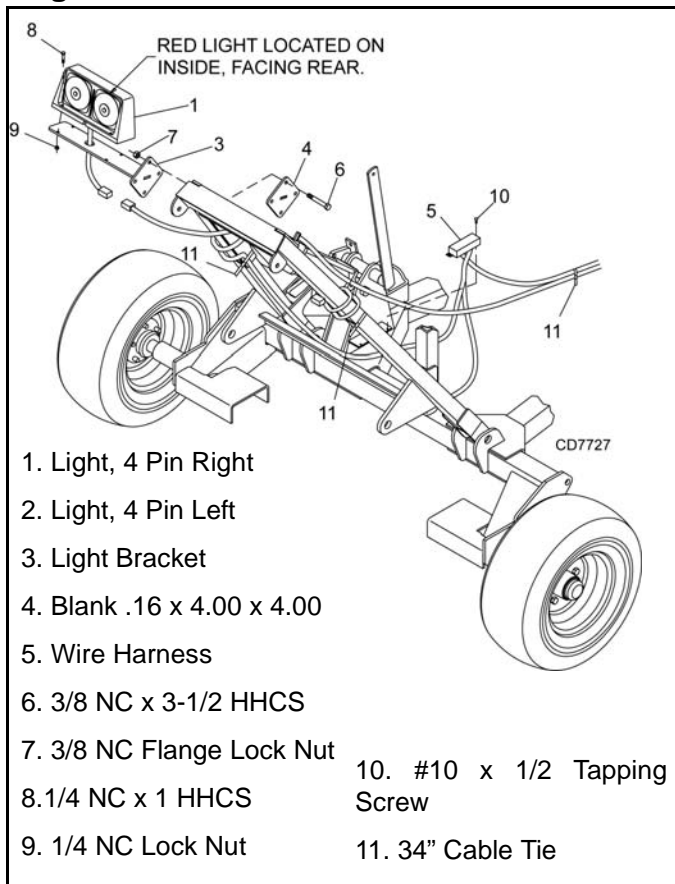
■ **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**

Attach the mower hydraulic hose to the tractor port. Hydraulic quick coupler is not supplied.

**NOTE:** The mower hydraulic system should have been filled at the factory. Always assume it is empty. Fully purge air and fill the hydraulic system by raising and lowering wings several times while hooked to a tractor hydraulic supply. Keep all personnel away while raising and lowering.

## OPTIONAL EQUIPMENT

### Light Kit Installation

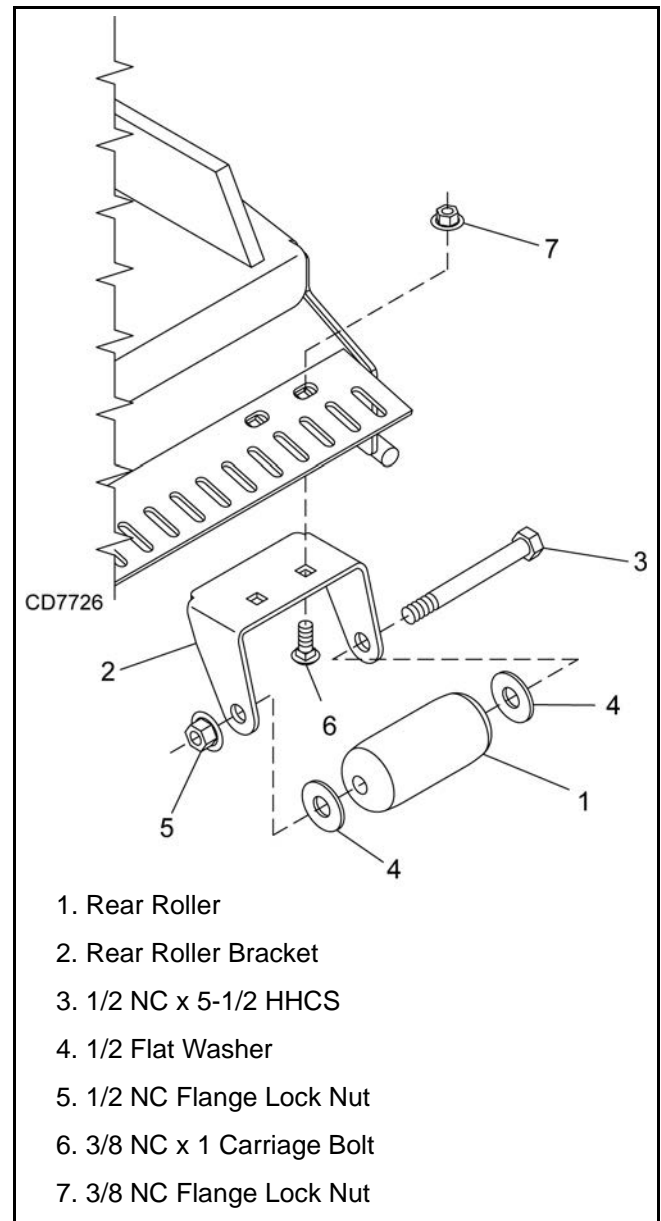


**Figure 27.** Light Kit Installation

1. Install wire harness (5) to bracket on trailer frame using #10 screws (10).
2. Route wires as shown. Be sure wire labeled "Left" is routed to the left side of the unit. Wrap excess wire around rear deck frame tubes as shown.
3. Clamp brackets (3) to rear deck frame tubes using blanks (4), 3/8 bolts (6) and nuts (7).
4. Secure left and right lamp (1 & 2) to brackets using 1/4 bolts (8) and nuts (9).
5. Connect light to wiring harness.
6. Pull any slack out of main wire and install cable ties (11) to rear hydraulic hose and trailer frame.

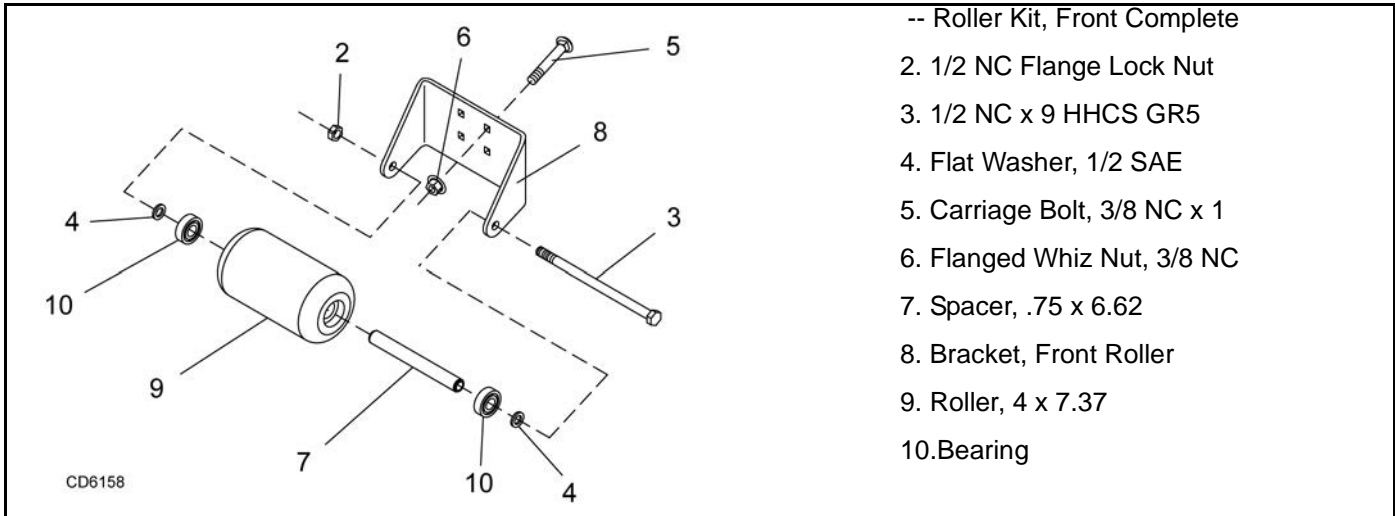
7. Extra slack in the light wires should be located near the wiring harness. Make sure wires cannot become entangled in driveline or hydraulic cylinder. Secure wires to frame tubes above cylinder and lock with cable ties.

### Rear Roller Kit Installation

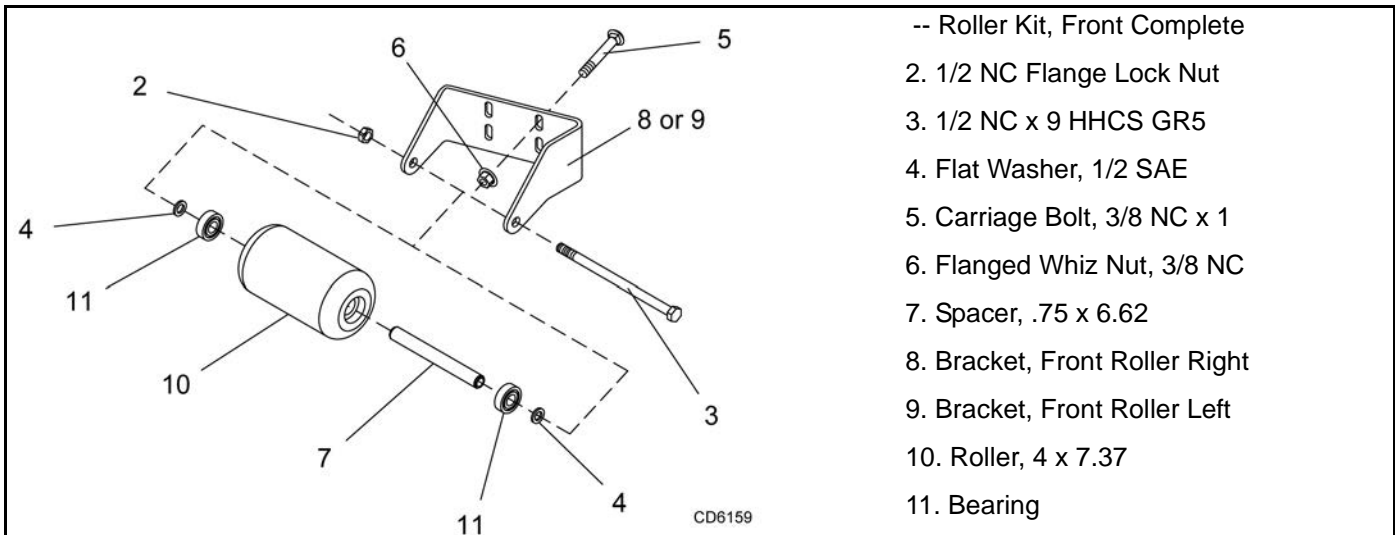


**Figure 28.** Rear Roller Kit Installation

## Front Roller Kit Installation

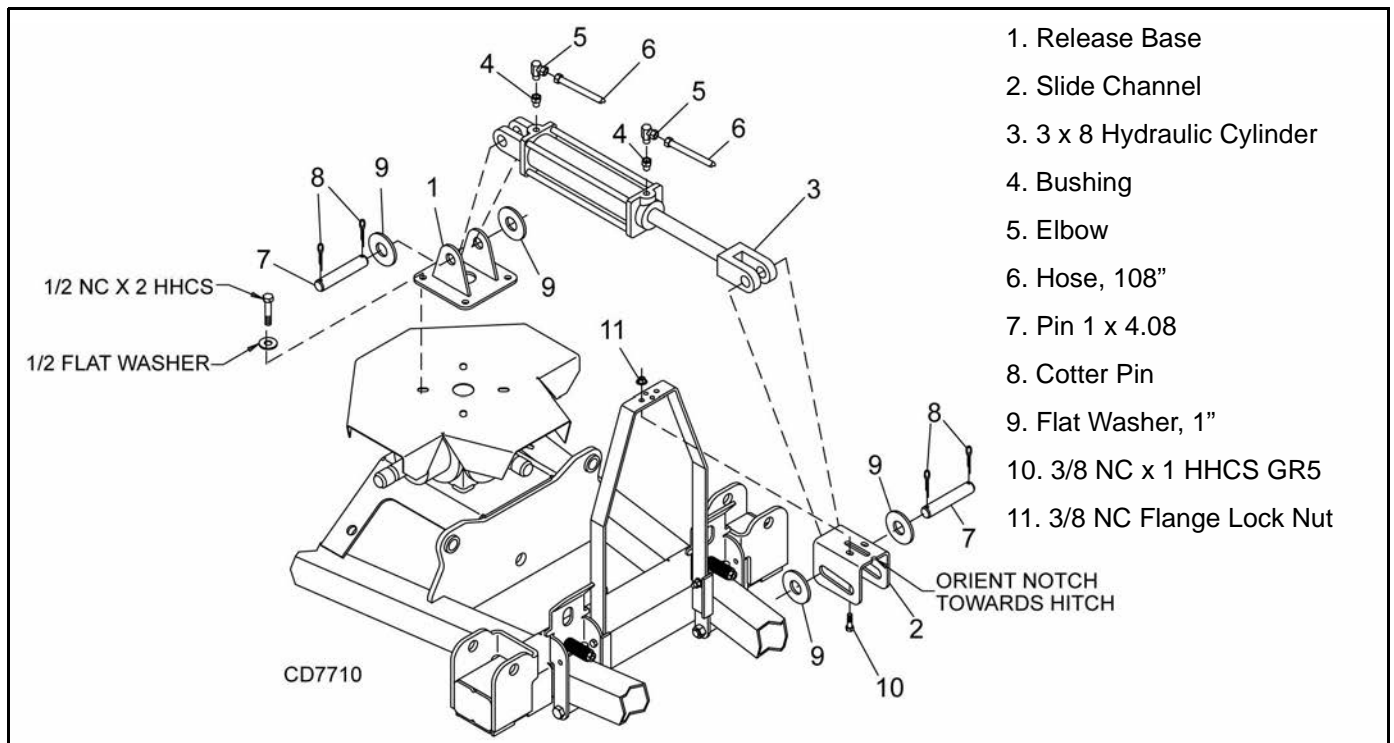


**Figure 29** FM1012 Rear Deck and FM1015 and FM1017 Front Roller Kit Installation



**Figure 30** FM1012 Wing Deck Front Roller Kit Installation

## Hydraulic Latch Release Installation



**Figure 31.** Hydraulic Latch Release Installation

1. Remove four 1/3 NC x 2 hex head cap screws and 1/2" flat washers from top of shield on trailer.
2. Attach item 1 on top of shield using hardware previously removed.
3. Attach item 2 to wing release lever using items 10 and 11.
4. Attach base end of cylinder (3) to item 1 using items 7, 8, and 9. Cylinder ports should be pointing upward.
5. Attach rod end of cylinder (3) to item 2 using items 7, 8, and 9.
6. Install reducers (4), elbows (5), and hoses to base of cylinder.

# DEALER CHECK LISTS

## PRE-DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

Inspect the equipment thoroughly after assembly to ensure it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Check that shields and guards are properly installed and in good condition. Replace if damaged.
- \_\_\_ Check all bolts to be sure they are properly torqued.
- \_\_\_ Check that all cotter pins and safety pins are properly installed. Replace if damaged.
- \_\_\_ Check that blades have been properly installed.
- \_\_\_ Check mower attitude and belt alignment
- \_\_\_ Check and grease all lubrication points as identified in lubrication information on page 20.
- \_\_\_ Check the level of gearbox fluids before delivery. Service, if required, as specified in the lubrication information on page 20.

## DELIVERY CHECK (DEALER'S RESPONSIBILITY)

- \_\_\_ Show customer how to make adjustments and select proper PTO speed.
- \_\_\_ Show customer how to make sure driveline is properly installed and that spring-activated locking pin or collar slides freely and is seated in groove on tractor PTO shaft.
- \_\_\_ Show customer how to determine the turning limits of the CV PTO driveline.
- \_\_\_ Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- \_\_\_ Make customer aware of optional equipment available so that customer can make proper choices as required.
- \_\_\_ Instruct customer how to lubricate and explain importance of lubrication.
- \_\_\_ Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.
- \_\_\_ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- \_\_\_ Explain to customer the potential crushing hazards of going underneath raised equipment. Instruct that before going underneath to disconnect the driveline, securely block up all corners with jackstands and to follow all instructions in BLOCKING METHOD, page 19 of the operator's manual. Explain that blocking up prevents equipment dropping from hydraulic leak down, hydraulic system failures or mechanical component failures.
- \_\_\_ Point out all guards and shields. Explain their importance and the safety hazards that exist when not kept in place and in good condition.



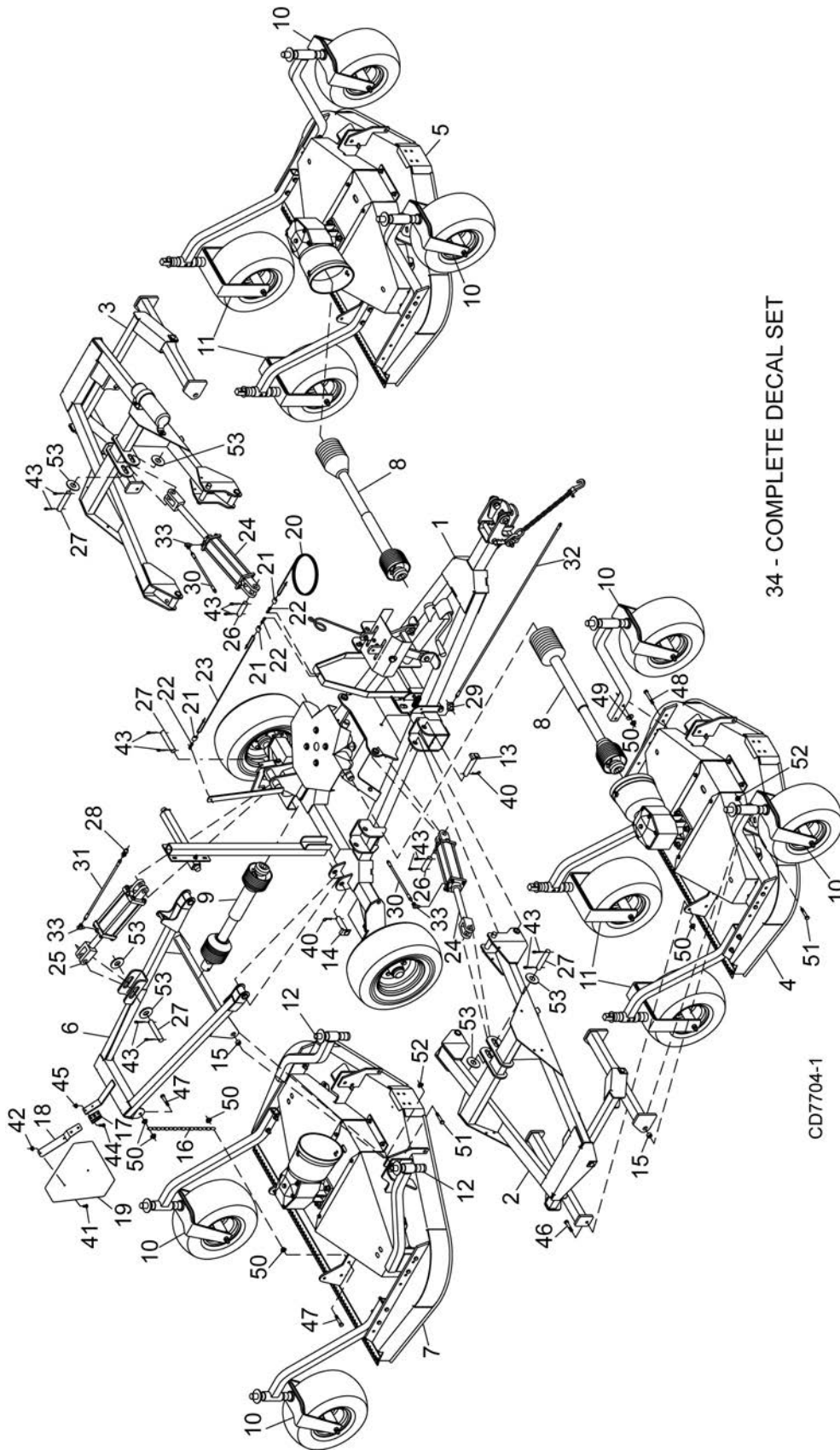
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# FM1012, FM1015 & FM1017 MAIN FRAME ASSEMBLY



34 - COMPLETE DECAL SET

CD7704-1

**40 Parts**

5WPMAN0862 (11/22/2010)



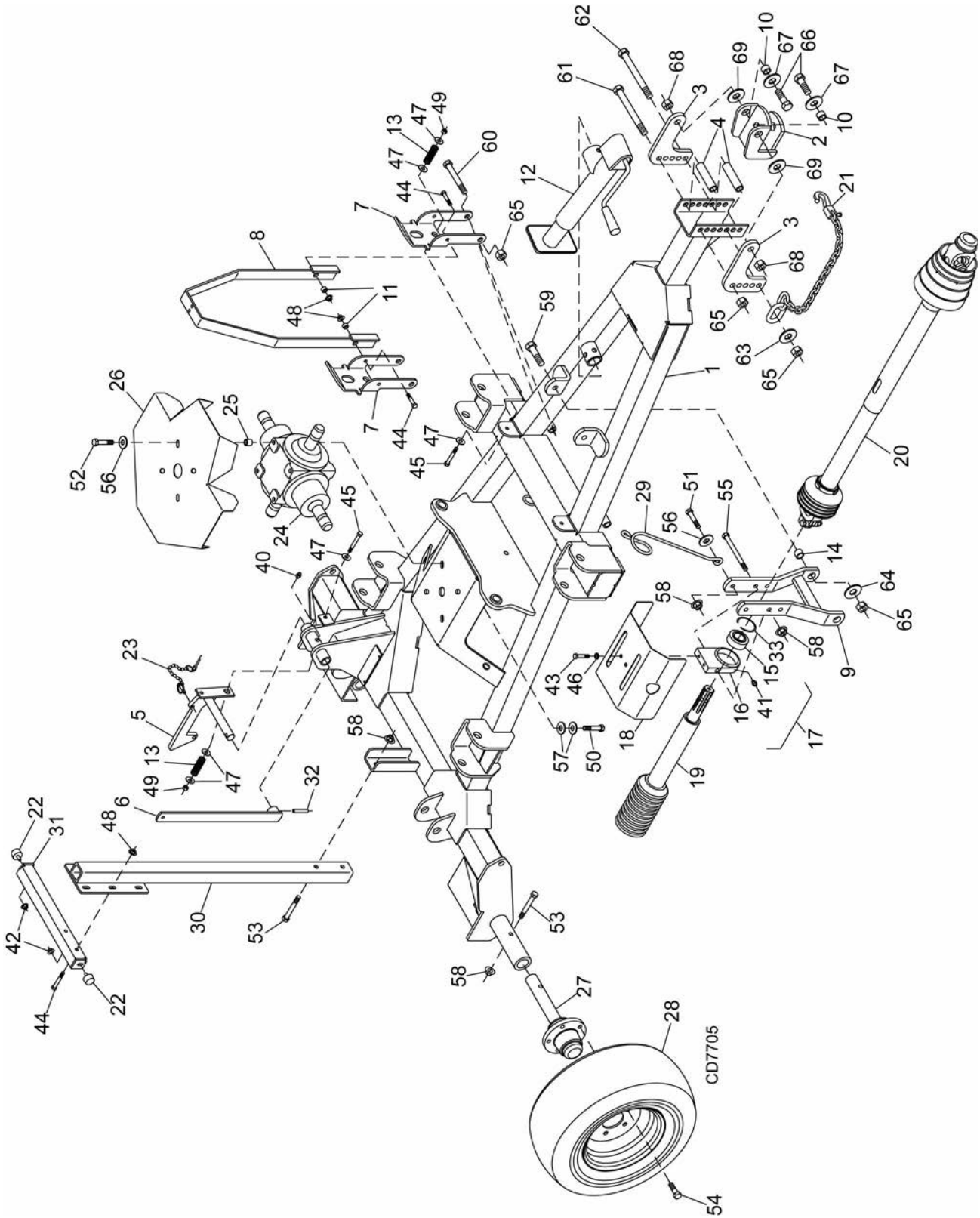
## FM1012, FM1015 & FM1017 MAIN FRAME ASSEMBLY

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	-----	1	Trailer assembly (see page 42)	23	5WP38294	1	Rope, .25 x 46.0
2	-----	1	Right wing assembly (see 44)	24	5WP1031166	2	Hydraulic cylinder 3 x 10 (see page 58)
3	-----	1	Left wing assembly (see page 44)	25	5WP29474	1	Hydraulic cylinder 3 x 8 (see page 58)
4	-----	1	Right deck assembly FM1012 (see page 46) -or-	26	5WP1631	2	1 x 3.63 Headless pin
4	-----	1	Right deck assembly FM1015, FM1012 (see page 45)	27	5WP8346	4	1 x 4.58 Headless pin
5	-----	1	Left deck assembly FM1012 (see page 46) -or-	28	5WP1006400	1	Bulkhead fitting, 9/16 JICM x 1/4 NPTM
5	-----	1	Left deck assembly FM1015, FM1017 (see page 45)	29	5WP1006401	1	Cross, 9/16 JICM x 1/4 NPTF
6	5WP40805	1	Rear wing assembly	30	5WP1006402	2	Hose, 33 x 9/16 JICF x 9/16 JICM
7	-----	1	Rear deck assembly (see page 45)	31	5WP1006403	1	Hose, 48 x 9/16 JICF x 9/16 JICM
8	5WP1023226	2	Drive, Cmpl 40, 21.3 x 32.3 FM1012 (see page 54) -or-	32	5WP1006404	1	Hose, 108 x 9/16 JICF x 1/4 NPTM
8	5WP1023227	2	Drive, Cmpl 40, 25.6 x 40.9 FM1015 (see page 54) -or-	33	5WP1006405	3	Elbow, 9/16 JICF x 1/2 NPTM 90o w/ 3/32 Restrictor
8	5WP1023228	2	Drive, Cmpl 40, 28.3 x 46.4 FM1017 (see page 54)	34	5WP40908	1	Complete decal set
9	5WP1023225	1	Drive, Cmpl 40, 26.9 x 43.5 (see page 54)	40	*	Pin, Safety 3/16	
10	-----	6	Rotating caster & arm (see page 48)	41	*	1/4 NC x 1/2 Round head screw	
11	-----	4	Non-rotating caster & arm (see page 48)	42	*	1/4 NC Hex nut	
12	-----	2	Height adjustment post and arm (see page 47)	43	*	Pin, Cotter 1/4 x 1-3/4	
13	5WP38001	4	Pin, Wing hinge	44	*	5/16 NC x 1/2 Carriage bolt	
14	5WP58984	2	Pin, Rear wing hinge	45	*	5/16 NC Flange lock nut	
15	5WP1791	6	.63 x 1.00 x .56 HT Sleeve	46	*	1/2 NC x 1-3/4 HHCS GR5	
16	5WP44638	2	1/4 Chain - 16 link	47	*	1/2 NC x 2 HHCS FT GR5	
17	5WP62484	1	SMV Socket	48	*	1/2 NC x 3-1/2 GR5	
18	5WP1004251	1	SMV Bracket	49	*	1/2 Flat washer	
19	5WP24611	1	SMV Emblem	50	*	1/2 NC Flange lock nut	
20	5WP38296	1	Rope, .25 x 95.0	51	*	5/8 NC x 2-1/2 HHCS GR5	
21	5WP38295	3	Rope clamp	52	*	5/8 NC Flange lock nut	
22	5WP38257	3	S-Hook .25 x 2.25	53	*	1 Standard flat washer	

HHCS Hex Head Cap Screw

\* Standard Hardware, Obtain Locally

# FM1012, FM1015 & FM1017 TRAILER ASSEMBLY



**42 Parts**

5WPMAN0862 (11/22/2010)

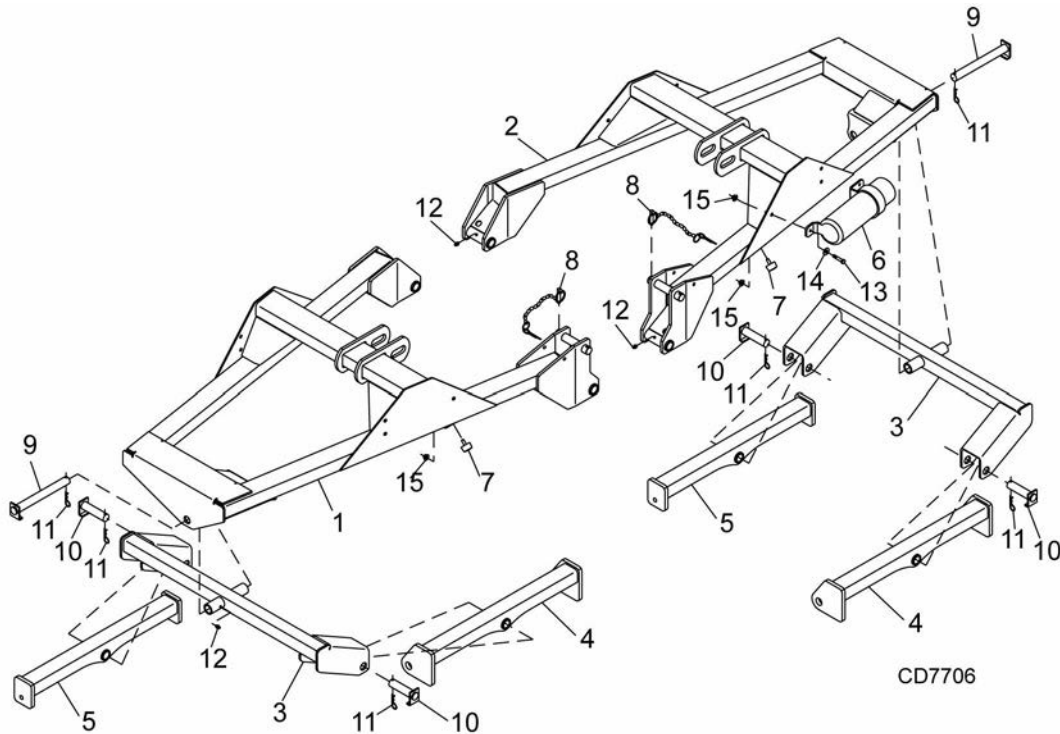
## FM1012, FM1015 & FM1017 TRAILER ASSEMBLY

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	-----	1	Trailer frame	28	5WP38298G	2	Wheel & Tire, 20.5 x 8.00 x 10 Gray
2	5WP1009501	1	Hitch, Cat 1 -or-	--	5WP38475G		Wheel Rim, 5-Bolt 8.00 x 10 Gray
2	5WP1009502	1	Hitch, Cat 2 -or-	29	5WP3443	1	Hydraulic hose holder
2	5WP1003635	1	Hitch, rigid clevis (optional)	30	5WP1031776	1	Wing stop mount bracket
3	5WP1006689	2	Hitch adjustment link	31	5WP1031780	1	Wing Stop FM1012 - or -
4	5WP44639	2	.76 x 1.00 x 4.12 Sleeve	31	5WP1031781	1	Wing stop FM1015, FM1017
5	5WP40804	1	Lock, rear deck	32	5WP11606	1	Pin, Spirol 3/8 x 1-1/2
6	5WP40880	1	Release lever, rear deck lock	33	5WP12128	1	.06 x 72 MM Retaining ring
7	5WP40879	2	Lock, wing deck	40		*	1/4-28 Grease fitting
8	5WP40938	1	Release lever, wing deck lock	41		*	1/4-28 90° Grease fitting
9	5WP19201	1	H-Frame	42		*	5/16 NC Flange lock nut
10	5WP44641	2	.78 x 1.00 x .69 HT Sleeve	43		*	3/8 NC x 1 HHCS GR5
11	5WP31464	2	.38 x .63 x .34 Sleeve	44		*	3/8 NC x 1-1/4 HHCS GR5
12	5WP23790	1	Parking jack	45		*	3/8 NC x 3-1/2 HHCS GR5
13	5WP21957	3	Spring, compression .58 x .08 x 2.4 40	46		*	3/8 Lock washer
14	5WP484	2	.63 x 1.00 x .44 HT Sleeve	47		*	3/8 Standard flat washer
15	5WP3502	1	Ball bearing	48		*	3/8 NC Flange lock nut
16	-----	1	Bearing housing (not serviced)	49		*	3/8 NC Lock nut
17	5WP1251	1	Bearing holder w/bearing (includes 15, 16, 33, 41)	50		*	1/2 NC x 1-1/4 HHCS GR5
18	5WP44637	1	Shield, front drive	51		*	1/2 NC x 1-3/4 HHCS GR5
19	-----	1	Drive, Yk & Shft Ntel 2400 x 26.4 (see page 57)	52		*	1/2 NC x 2 HHCS GR5
20	5WP1021100	1	Drive, Cmpl CV 35R, 35.0 x 47.6 (see page 56)	53		*	1/2 NC x 3 HHCS GR5
21	5WP19407	1	Safety chain	54		*	1/2 NF x 1-1/8 Wheel bolt
22	5WP71444	2	Rubber bumper	55		*	1/2 NC x 5-1/4 HHCS GR5
23	5WP38264	1	Pin, lynch chain & cotter	56		*	1/2 Standard flat washer
24	5WP40933	1	Gearbox, 4-Way Splitter	57			1/2 Flat washer, extra thick hardened
--	5WP58815	2	Seal, Thru Shaft 4-Way Grbx	58		*	1/2 NC Flange lock nut
--	5WP58816	2	Seal, Wing Shaft 4-Way Grbx	59		*	5/8 NC x 2 HHCS GR5
--	5WP58817	6	Bearing, Cup & Cone 4-Way Grbx	60		*	5/8 NC x 5 HHCS GR5
--	5WP1011780	1	Vent plug & washer	61		*	5/8 NC x 7 HHCS GR5
24C	5WP40933C	1	Gearbox, 4-Way Splitter (Comer)	62		*	5/8 NC x 7-1/2 HHCS GR5
--	5WP57462	4	Bearing, Cup & Cone	63	5WP34467		.63 x 2.00 x .38 Flat washer
--	5WP20890	2	Bearing, Ball	64	5WP10635		.63 x 1.75 x 14 Ga Cupped washer
--	5WP57463	4	Oil Seal	65		*	5/8 NC Lock nut
--	5WP57076	1	Vent plug	66		*	3/4 x 2-1/4 HHCS GR5
25	5WP62626	4	.76 x 1.00 x 1.00 Sleeve	67	5WP28873		3/4 x 1-1/2 x 1/4 Flat washer
26	5WP44636	1	Shield, Gearbox 4-Way	68		*	3/4 NC Lock nut
27	5WP1001020	2	Wheel Hub & Axle (see page 47)	69	5WP44640		1.04 x 2.25 x .17 Cupped washer

HHCS Hex Head Cap Screw

\* Standard Hardware, Obtain Locally

## FM1012, FM1015 & FM1017 WING FRAME

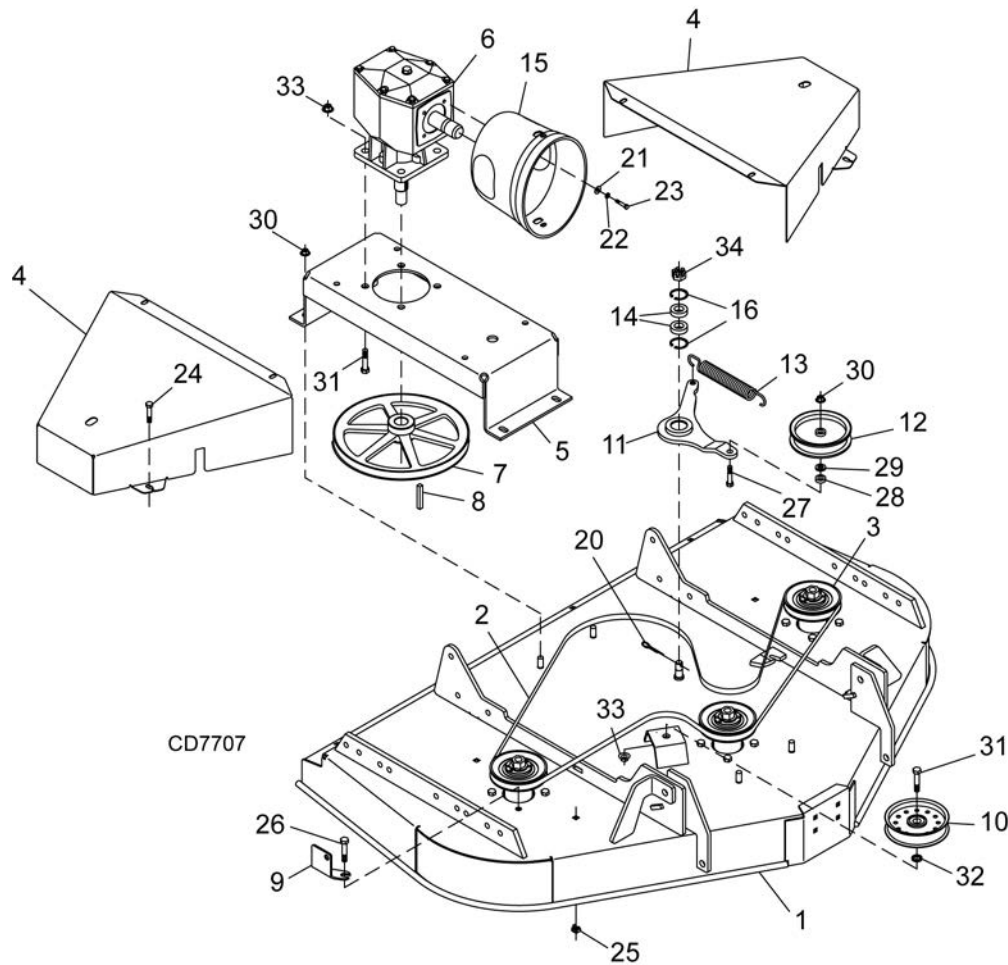


REF	QTY	FM1012	FM1015	FM1017	DESCRIPTION
1	1	5WP1032460	5WP1032480	5WP1032490	Frame, right wing
2	1	5WP1032461	5WP1032481	5WP1032491	Frame, left wing
3	2	5WP1032451	5WP1032455	5WP1032455	Link, wing deck lift
4	2	5WP40895	5WP40895	5WP40887	Trunnion, front deck
5	2	5WP40896	5WP40896	5WP40888	Trunnion, rear deck
6	1	5WP1003828	5WP1003828	5WP1003828	Manual tube
7	2	5WP71444	5WP71444	5WP71444	Rubber bumper
8	2	5WP38264	5WP38264	5WP38264	Pin, lynch chain & cotter
9	2	5WP58980	5WP58980	5WP58980	Pin, wing deck link
10	4	5WP58982	5WP58982	5WP58982	Pin, deck link trunnion
11	*				Pin, safety 3/16
12	*				1/4-28 Grease fitting
13	*				5/16 NC x 1 HHCS GR5
14	*				5/16 SAE Flat washer
15	*				5/16 NC Flange lock nut

HHCS Hex Head Cap  
Screw

\* Standard Hardware,  
obtain locally

## FM1012 CENTER DECK FM1015 & FM1017 CENTER & WING DECK ASSEMBLY

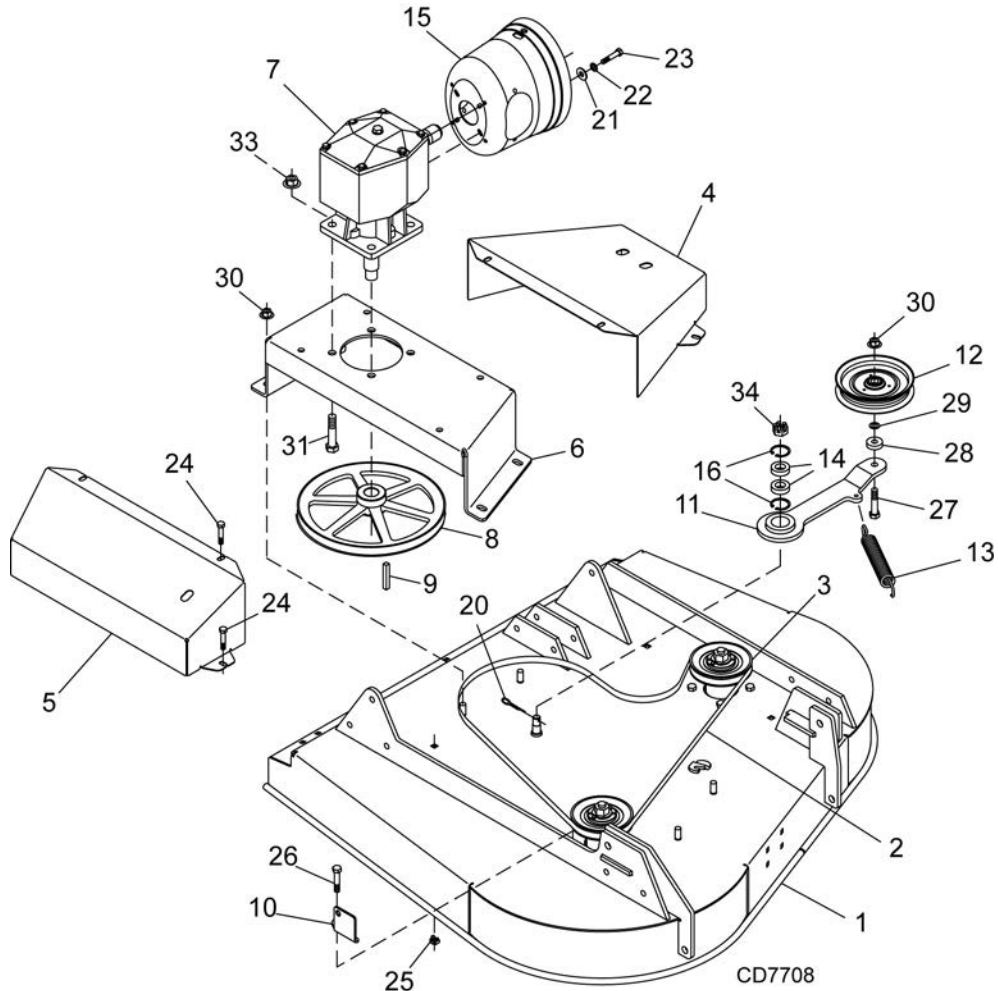


REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	5WP1031795	1	5' Mower Deck (FM1012 Rear, FM1015 Wings)	15	5WP1002048	1	Clutch Shield
1	5WP1031796	1	6' Mower Deck (FM1015 Rear, FM1017 All)	16	5WP35141	2	Ring, Retaining Int .062 x 1.56
2	5WP1001244	1	V-Belt W99 (FM1012 Rear, FM1015 Wings)	20	*	*	Pin, Cotter 3/16 x 1-1/2
2	5WP18879	1	V-Belt W112 (FM1015 Rear, FM1017 All)	21	*	*	Washer, Flat 5/16
3	-----	3	CW Spindle assembly (See page 51)	22	*	*	Lock Washer, 5/16
4	5WP1014417	2	Belt Shield, 5' Deck (FM1012 Rear, FM1015 Wings)	23	*	*	M8 x 1.25P x 20 MM HHCS
4	5WP1014418	2	Belt Shield, 6' Deck (FM1015 Rear, FM1017 All)	24	*	*	3/8 NC x 1 Hex Flange Serrated
5	5WP53534	1	Gearbox Stand	25	5WP1008011		3/8 NC SQ Nut with Retainer
6	5WP1002499	1	Gearbox, 1:1.92 (See page 50)	26	*	*	Screw, HHCS 1/2 NF x 1-1/4 GR5
7	5WP1014410	1	Sheave, Offset 13.25 P.D.	27	*	*	1/2 NC x 2-1/2 HHCS GR5
8	5WP29792	1	Key, HT 1/4 x 1/4 x 1-1/4	28	5WP24537		Washer, Flat .50 x 1.38 x .38
9	5WP53567	1	Guide, Belt 8 Ga Formed	29	5WP31983		Shim, .50 x .88 x 18GA
10	5WP64555	1	Idler, Flat 5.5 Dia.	30	*	*	Flange Lock Nut 1/2 NC
11	5WP58989	1	Idler Arm Assembly	31	*	*	5/8 NC x 1-3/4 HHCS GR5
12	5WP53595	1	Idler, Flat 5.0 Dia.	32	5WP1517		Flat Washer, .63 x 1.38 x 7 GA
13	5WP67131	1	Spring, Ext .177 x 1.22 x 9.88	33	*	*	5/8 Flange Lock Nut
14	5WP35193	2	Bearing, Ball	34	5WP302178		5/8 NF Castle Nut

HHCS Hex Head Cap Screw

\* Standard Hardware, Obtain Locally

## FM1012 WING DECK ASSEMBLY



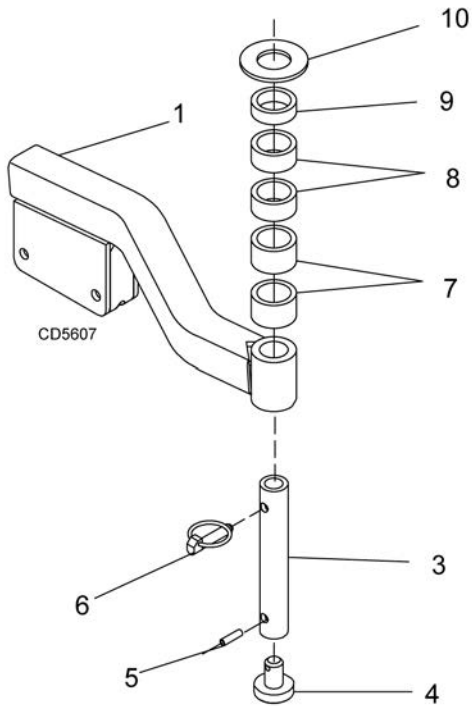
REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	5WP1031800	1	4' Mower Deck, RH -or-	16	5WP35141	2	Ring, Retaining Int .062 x 1.56
1	5WP1031801	1	4' Mower Deck, LH	20		*	Pin, Cotter 3/16 x 1-1/2
2	5WP40930	1	V-Belt, W80	21		*	Washer, Flat 5/16 SAE
3	-----	3	CW Spindle assembly (See page 56)	22		*	Lock Washer, 5/16
4	5WP1031783	1	Inner Belt Shield	23		*	M8 x 1.25P x 20MM HHCS
5	5WP1031784	1	Outer Belt Shield, RH -or-	24		*	Screw 3/8NC X 1 Hex Flange Ser-rated
5	5WP1031785	1	Outer Belt Shield, LH	25	5WP1008011		Nut, SQ 3/8 NC With Retainer
6	5WP58294	1	Gearbox Stand, RH -or-	26		*	Screw, HHCS 1/2 NF x 1-1/4 GR5
6	5WP58295	1	Gearbox Stand, LH	27		*	HHCS, 1/2 NC x 2-1/2 GR5
7	5WP1002499	1	Gearbox, 1:1.92 (See page 50)	28	5WP24537		Washer, Flat .2 x 1.38 x .375
8	5WP1014410	1	Sheave, Offset 13.25 PD	29	5WP31983		Shim, .50 x .88 x 18GA
9	5WP29792	1	Key, 1/4 x 1/4 x 1-1/4 HT	30		*	Nut, Flanged Lock 1/2 NC
10	5WP1027525	2	Belt Guide	31		*	Screw, Flngd Hex Head 5/8 NC x 1-3/4
11	5WP57939	1	Idler Arm Assembly	33		*	Nut, Flanged Lock 5/8 NC
12	5WP53595	1	Idler, Flat 5.0 Dia	34	5WP302178		Nut, Castle 5/8 NF
13	5WP67131	1	Spring, Ext .177 x 1.22 x 9.88				
14	5WP35193	2	Bearing, Ball				
15	5WP1002048	1	Clutch Shield				

HHCS Hex Head Cap Screw  
 \* Standard Hardware, Obtain Locally

**46 Parts**

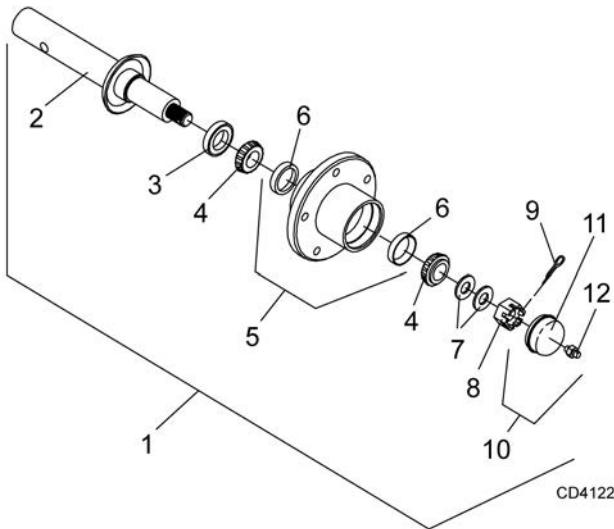
5WPMAN0862 (11/22/2010)

## HEIGHT ADJUSTMENT POST



REF	PART	QTY	DESCRIPTION
1	5WP58993	1	Caster Arm, RH (FM1012) - or -
1	5WP1031754	1	Caster Arm, RH (FM1015, FM1017)
2	5WP58994	1	Caster Arm, LH (FM1012) - or -
2	5WP1031755	1	Caster Arm, LH (FM1015, FM1017)
3	5WP58998	1	Sleeve, Drid .81 x 1.25 x 8.00
4	5WP58999	1	Wear Pad
5	5WP15134	1	Pin, Spirol .25 x 1.00
6	5WP27542	1	7/16 x 11/32 Klick Pin
7	5WP52855	2	Sleeve, 1.28 x 1.66 x 1.00
8	5WP52854	2	Sleeve, 1.28 x 1.66 x .75
9	5WP52853	1	Sleeve, 1.28 x 1.66 x .50
10	5WP7163	1	Washer, Flat 1-1/4 Standard

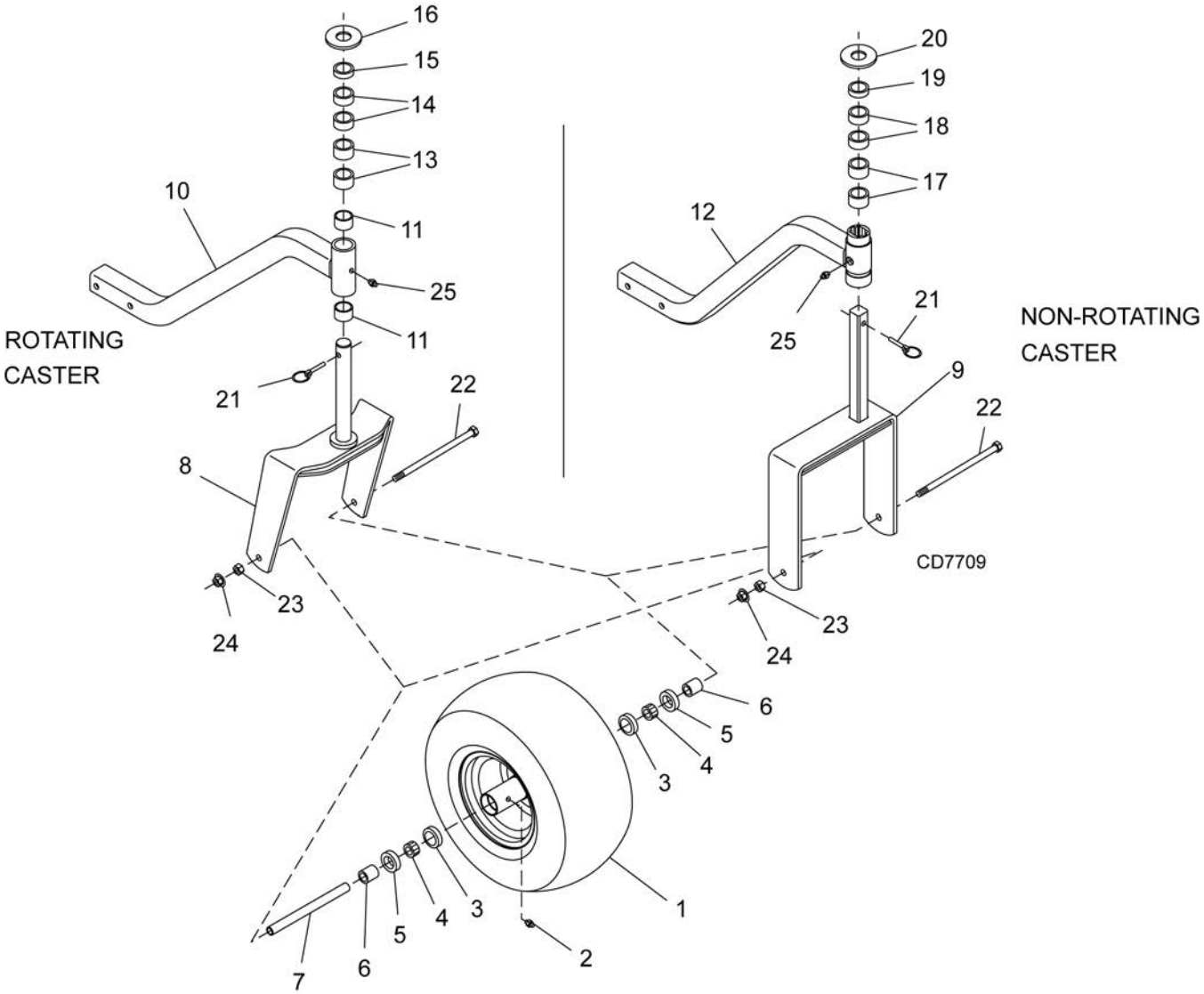
## HUB & AXLE ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	5WP1001020	1	Wheel Hub & Axle Assembly
2	5WP1001021	1	Axle Shaft
3	5WP314	1	Seal, 1.50 x 2.44 x .31
4	5WP2303	2	Bearing, Cone
5	5WP38437	1	Wheel Hub, Housing w/Cups
6	5WP2305	2	Bearing, Cup
7		*	Washer, Flat 3/4 Standard
8	5WP5849	1	Nut, Slotted Hex 3/4 NF
9		*	Pin, Cotter 3/16 x 1
10	5WP14133	1	Hub Cap, Assembly w/Fitting
11	5WP531	1	Hub Cap
12		*	Grease Fitting, 1/4 Tapered Thread

\* Standard Hardware, Obtain Locally

# CASTER ARM & WHEEL ASSEMBLY



**48 Parts**

5WPMAN0862 (11/22/2010)



## CASTER ARM & WHEEL ASSEMBLY

### FM1012

REF	PART	QTY	DESCRIPTION
1	5WP38267G	1	Wheel 15.00 x 6.00 x 6 Gray
	5WP38476G		Wheel Rim 6.00 x 6 w/cups Gray
2	5WP195	1	Grease fitting, 1/8 pipe thread
3	5WP2306	2	Bearing cup
4	5WP2304	2	Bearing cone
5	5WP5624	2	1.13 x 1.78 x .47 Seal
6	5WP14318	2	.75 x 1.13 x 1.25 HT Sleeve
7	5WP38111	1	.53 x .75 x 6.75 HT Sleeve
8	5WP58958	1	Rotating caster yoke
9	5WP58961	1	Non-rotating caster yoke
10	5WP58956	1	Rotating caster arm (includes item 11 & 25)
11	5WP31780	2	1.25 x 1.50 x 1.50 Oilite bushing
12	5WP58968	1	Non-rotating caster arm
13	5WP52855	2	1.25 x 1.90 x 1.00 Sleeve
14	5WP52854	2	1.25 x 1.90 x .75 Sleeve
15	5WP52853	1	1.25 x 1.90 x .50 Sleeve
16	5WP7163	1	1.25 Standard flat washer
17	5WP58987	2	1.50 x 1.90 x 1.00 Sleeve
18	5WP58986	2	1.50 x 1.90 x .75 Sleeve
19	5WP58985	1	1.50 x 1.90 x .50 Sleeve
20	5WP6237	1	1.50 x 2.25 x 13 ga Flat washer
21	5WP27542	1	7/16 x 11/32 Klik pin
22	5WP38107		1/2 NC x 9 HHCS GR5
23		*	1/2 NC Hex nut
24		*	1/2 NC Flange lock nut
25		*	1/4-28 Grease fitting

HHCS Hex Head Cap Screw

\* Standard Hardware, obtain locally

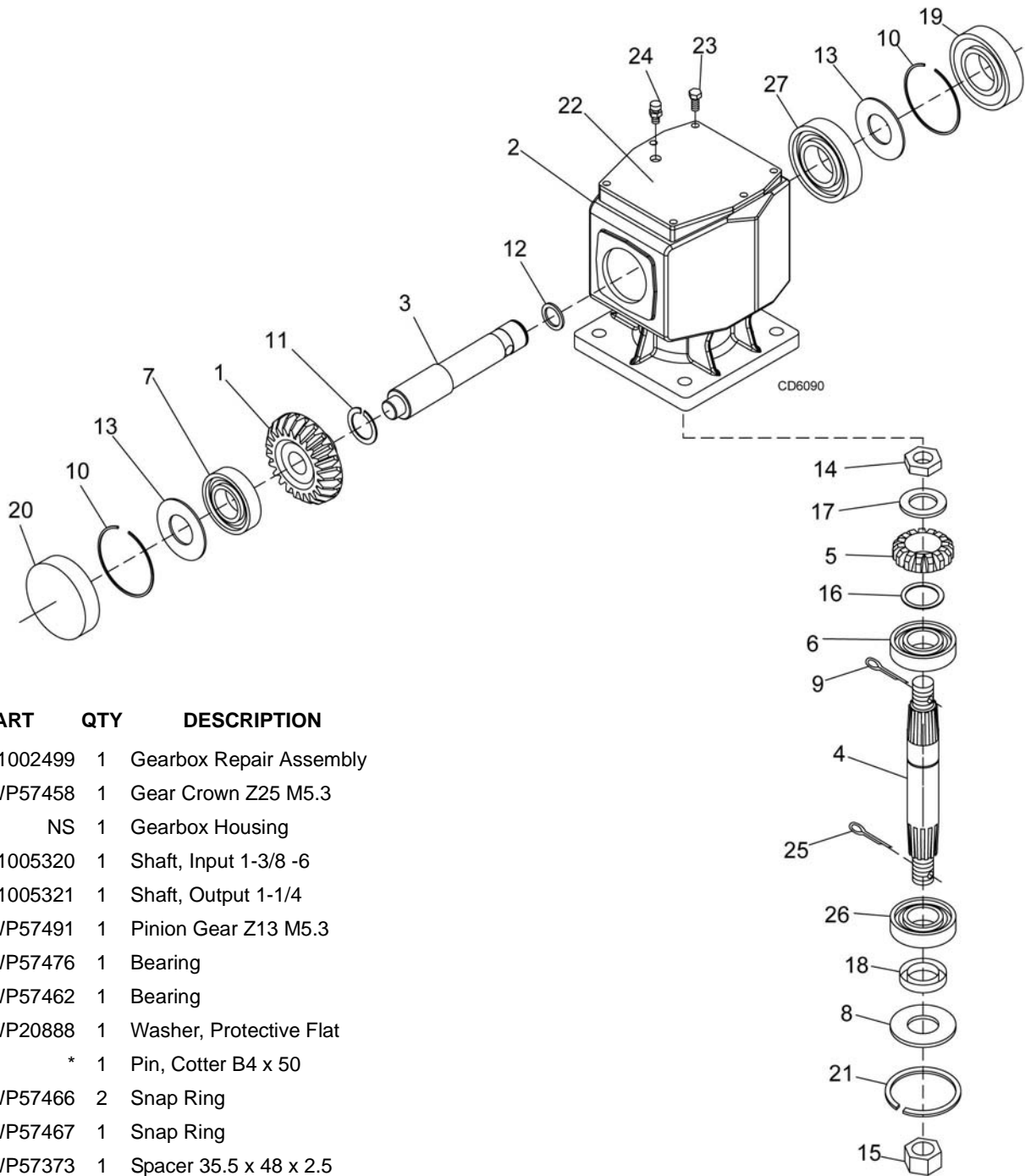
### FM1015 & FM1017

REF	PART	QTY	DESCRIPTION
1	5WP1031703G	1	Wheel 18.00 x 9.50 x 8 Gray
	5WP1031819G		Wheel Rim 9.50 x 8 w/cups Gray
2	5WP195	1	Grease fitting, 1/8 pipe thread
3	5WP2306	2	Bearing cup
4	5WP2304	2	Bearing cone
5	5WP5624	2	1.13 x 1.78 x .47 Seal
6	5WP14318	2	.75 x 1.13 x 1.25 HT Sleeve
7	5WP1031773	1	.53 x .75 x 10.65 HT Sleeve
8	5WP1031700	1	Rotating caster yoke
9	5WP1031714	1	Non-rotating caster yoke
10	5WP1031705	1	Rotating caster arm (includes item 11 & 25)
11	5WP31780	2	1.25 x 1.50 x 1.50 Oilite bushing
12	5WP1031712	1	Non-rotating caster arm
13	5WP52855	2	1.25 x 1.90 x 1.00 Sleeve
14	5WP52854	2	1.25 x 1.90 x .75 Sleeve
15	5WP52853	1	1.25 x 1.90 x .50 Sleeve
16	5WP7163	1	1.25 Standard flat washer
17	5WP58987	2	1.50 x 1.90 x 1.00 Sleeve
18	5WP58986	2	1.50 x 1.90 x .75 Sleeve
19	5WP58985	1	1.50 x 1.90 x .50 Sleeve
20	5WP6237	1	1.50 x 2.25 x 13 ga Flat washer
21	5WP27542	1	7/16 x 11/32 Klik pin
22	5WP1031793		1/2 NC x 13 HHCS GR5
23		*	1/2 NC Hex nut
24		*	1/2 NC Flange lock nut
25		*	1/4-28 Grease fitting

HHCS Hex Head Cap Screw

\* Standard Hardware, obtain locally

# WING GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	5WP1002499	1	Gearbox Repair Assembly
1	5WP57458	1	Gear Crown Z25 M5.3
2	NS	1	Gearbox Housing
3	5WP1005320	1	Shaft, Input 1-3/8 -6
4	5WP1005321	1	Shaft, Output 1-1/4
5	5WP57491	1	Pinion Gear Z13 M5.3
6	5WP57476	1	Bearing
7	5WP57462	1	Bearing
8	5WP20888	1	Washer, Protective Flat
9	*	1	Pin, Cotter B4 x 50
10	5WP57466	2	Snap Ring
11	5WP57467	1	Snap Ring
12	5WP57373	1	Spacer 35.5 x 48 x 2.5
13	5WP57328	2	Kit, Shim 60.3 x 71.6
14	5WP57468	1	Nut, Castle
15	5WP51946	1	Nut, Castle M24 x 2
16	5WP57328	1	Kit, Shim 30.3 x 44
17	5WP57473	1	Washer, Flat
18	5WP20900	1	Seal, Oil 40 x 80 x 12
19	5WP57463	1	Seal, Oil 35 x 72 x 10
20	5WP57374	1	Cap
21	5WP20897	1	Snap Ring

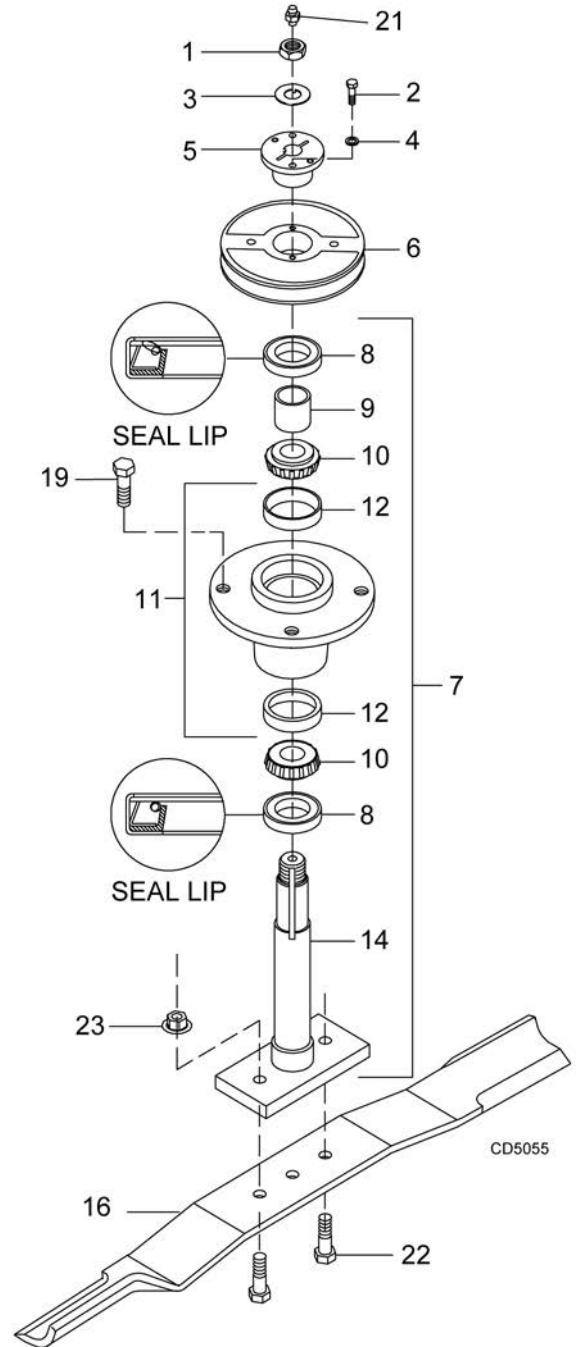
REF	PART	QTY	DESCRIPTION
22	5WP1005322	1	Cover, Top
23	*	6	Bolt 8mm x 14mm
24	5WP57076	1	Plug, Breather 1/2
25	*	1	Pin, Cotter 5 x 50
26	5WP57478	1	Bearing
27	5WP20890	1	Ball bearing
	NS		Not Serviced
	*		Standard Hardware - Obtain Locally

**50 Parts**

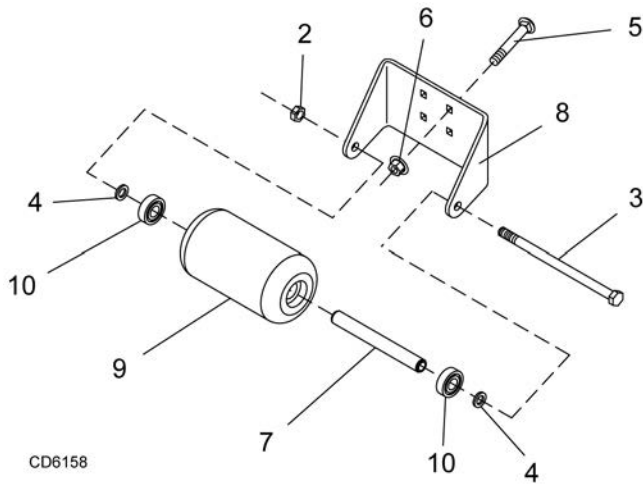
5WPMAN0862 (11/22/2010)

## BLADE & SPINDLE ASSEMBLY

REF	PART	QTY	DESCRIPTION
1	5WP37009		Nut, Jam 7/8 NF
2		*	Screw HHCS 1/4 NC x 1 GR5
3	5WP52898		Washer, Lock .929 x 1.66
4		*	Washer, Lock 1/4
5	5WP34440		Bushing, H 1 Strt bore w/key
6	5WP12622		Sheave, H 1 BK 5.0 PD (FM1012 Wing Deck, FM1015 Rear Deck, FM1017 Wing & Rear Deck) <b>-or-</b>
6	5WP66694		Sheave, H 1 BK 4.17 PD (FM1012 Rear Deck & FM1015 Wing Deck)
7	5WP52881		Spindle Assembly Complete
8	5WP52949		Seal 1.50 x 2.12 x .31
9	5WP52872		Sleeve 1.14 x 1.50 x .55
10	5WP29899		Bearing, Cone
11	5WP52882		Spindle, Housing With Cups
12	5WP29898		Bearing, Cup
14	5WP52852		Shaft, Blade Spindle
16	5WP7144BDKT		Blade Kit, High Lift FM1012 Complete (7 blades)
16	5WP9180BDKT		Blade Kit, High Lift FM1015 Complete (9 blades)
16	5WP9204BDKT		Blade Kit, High Lift FM1017 Complete (9 blades)
16	5WP7144BDKT2		Blade Kit, Low Lift FM1012 Complete (7 blades)
16	5WP9180BDKT2		Blade Kit, Low Lift FM1015 Complete (9 blades)
16	5WP9204BDKT2		Blade Kit, Low Lift FM1017 Complete (9 blades)
16	5WP1008199K2		Blade Kit, High Lift, 48 Decks (2 blades)
16	5WP1001511K2		Blade Kit, Low Lift, 48 Decks (2 blades)
16	5WP1001850K2		Blade Kit, Mulching, 48" Decks (2 blades)
16	5WP1001513KT		Blade Kit, High Lift, 60 Decks (3 blades)
16	5WP1001510KT		Blade Kit, Low Lift, 60 Decks (3 blades)
16	5WP1001950KT		Blade Kit, Mulching, 60" Decks (3 blades)
16	5WP1008199KT		Blade Kit, High Lift 72 Decks (3 blades)
16	5WP1001511KT		Blade Kit, Low Lift 72 Decks (3 blades)
16	5WP1001850KT		Blade Kit, Mulching, 72 Decks (3 blades)
19	5WP4358		Screw, HHCS 1/2 NF x 1-1/4 GR5
21	5WP1972		Grease Fitting 1/4-28 Tapered Thread
22	5WP3379		Screw, HHCS 1/2 NC x 1-1/2 GR5
23		*	Nut, Flanged Lock 1/2 NC



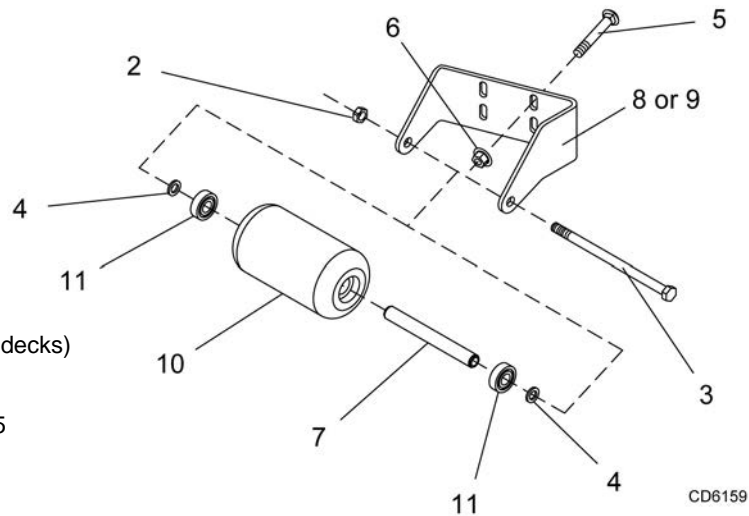
## FM1012 REAR DECK AND FM1015 & FM1017 FRONT ROLLER ASSEMBLY (OPTIONAL)



REF	PART	QTY	DESCRIPTION
	5WD1006417	1	Front roller kit, complete (one per deck)
2	*	1	1/2 NC Flanged lock nut
3	5WP38107	1	1/2 NC x 9 Cap screw GR5
4	5WP3598	2	1/2 Flat washer SAE
5	*	4	3/8 NC x 1 Carriage bolt
6	5WP70069	4	3/8 NC Flanged whiz nut
7	5WP1006420	1	Spacer, .75 x 6.62
8	5WP1006419	1	Bracket, front roller
9	5WP1006418	1	Roller, 4 x 7.37
10	5WP35193	2	Bearing

\* Standard Hardware, Obtain Locally

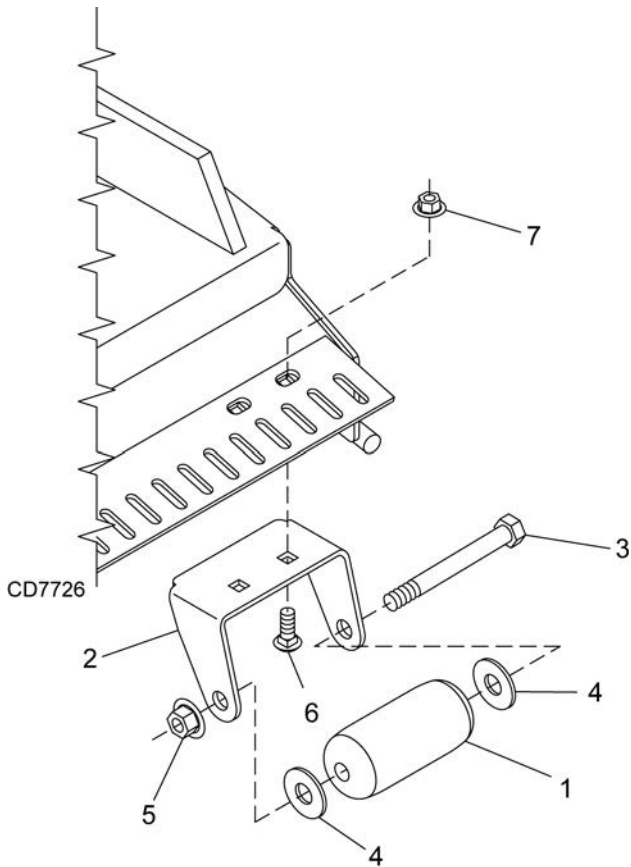
## FM1012 WING DECK FRONT ROLLER ASSEMBLY (OPTIONAL)



REF	PART	QTY	DESCRIPTION
	5WD1006421		Roller Kit, Front Complete (for both Right & Left wing decks)
2	*	1	1/2 NC Flanged lock nut
3	5WP38107	1	1/2 NC x 9 Cap screw GR5
4	5WP3598	2	1/2 Flat washer SAE
5	*	4	3/8 NC x 1 Carriage bolt
6	5WP70069	4	3/8 NC Flanged whiz nut
7	5WP1006420	1	Spacer, .75 x 6.62
8	5WP1006422	1	Bracket, front roller right
9	5WP1006423	1	Bracket, front roller left
10	5WP1006418	1	Roller, 4 x 7.37
11	5WP35193	2	Bearing

\* Standard Hardware, Obtain Locally

## REAR ROLLER ASSEMBLY (OPTIONAL)



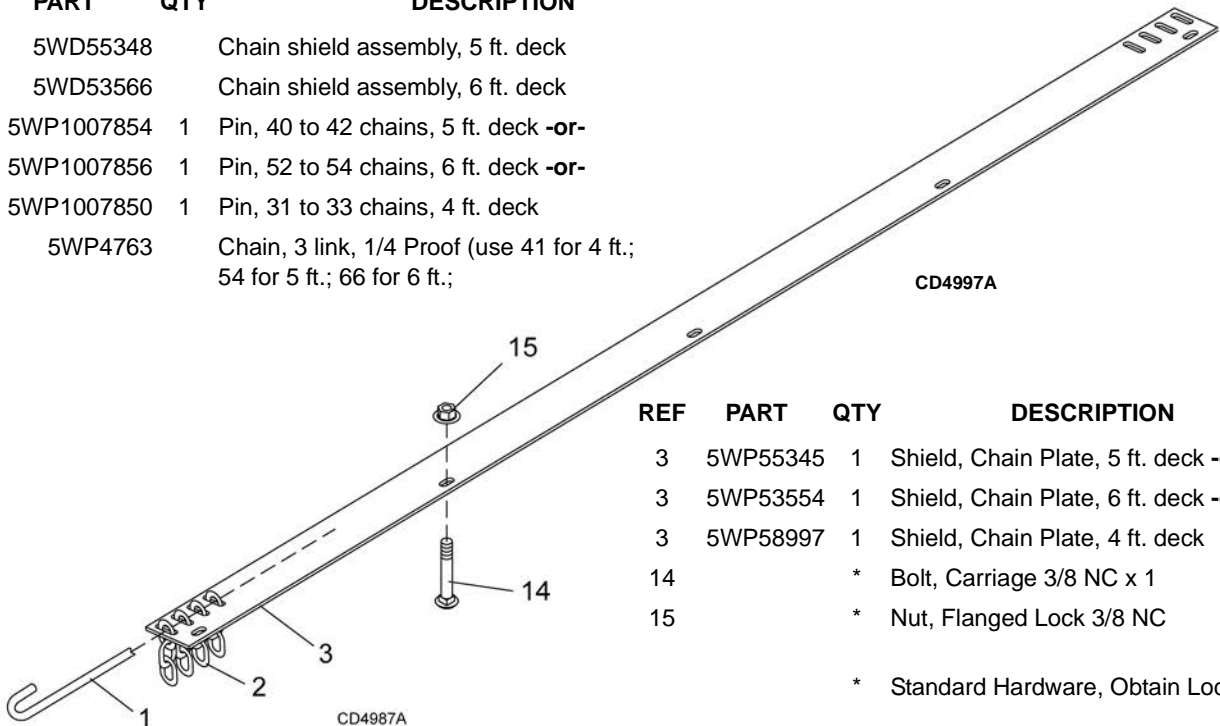
REF	PART	QTY	DESCRIPTION
	5WD1031818	1	Kit, TBW Rear Roller
1	5WP1029865	2	Rear Roller
2	5WP1031723	2	Rear Roller Bracket
3	5WP12305		1/2 NC x 5-1/2 HHCS GR5
4	*		1/2 Flat washer SAE
5	*		1/2 NC Flange Lock Nut
6	*		3/8 NC x 1 Carriage Bolt GR5
7	*		3/8 NC Flange Lock Nut

HHCS Hex Head Cap Screw

\* Standard Hardware, Obtain Locally

## REAR CHAIN SHIELDING ASSEMBLY

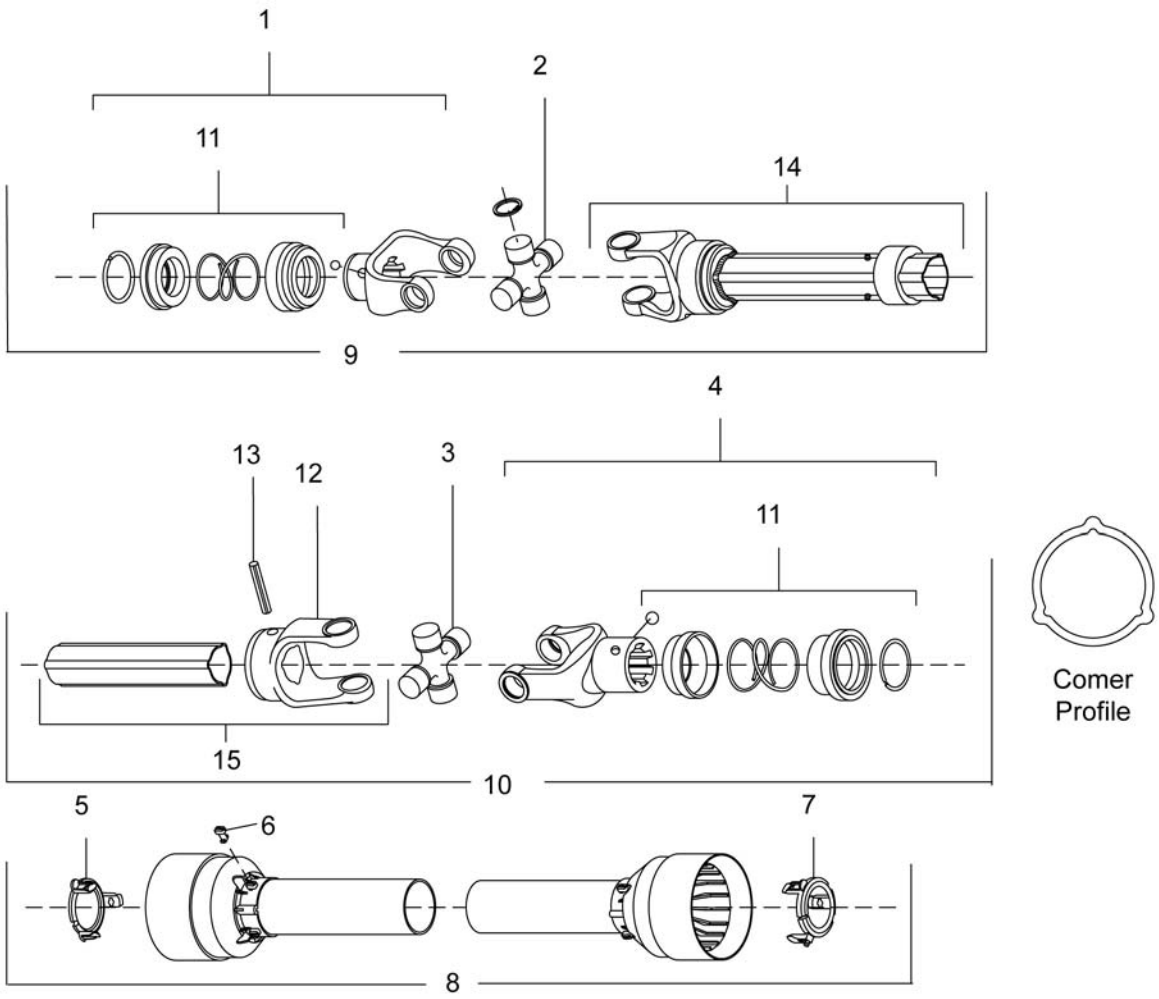
REF	PART	QTY	DESCRIPTION
	5WD55348		Chain shield assembly, 5 ft. deck
	5WD53566		Chain shield assembly, 6 ft. deck
1	5WP1007854	1	Pin, 40 to 42 chains, 5 ft. deck <b>-or-</b>
1	5WP1007856	1	Pin, 52 to 54 chains, 6 ft. deck <b>-or-</b>
1	5WP1007850	1	Pin, 31 to 33 chains, 4 ft. deck
2	5WP4763		Chain, 3 link, 1/4 Proof (use 41 for 4 ft.; 54 for 5 ft.; 66 for 6 ft.;



REF	PART	QTY	DESCRIPTION
3	5WP55345	1	Shield, Chain Plate, 5 ft. deck <b>-or-</b>
3	5WP53554	1	Shield, Chain Plate, 6 ft. deck <b>-or-</b>
3	5WP58997	1	Shield, Chain Plate, 4 ft. deck
14	*		Bolt, Carriage 3/8 NC x 1
15	*		Nut, Flanged Lock 3/8 NC

\* Standard Hardware, Obtain Locally

**FM1012, FM1015 & FM1017 REAR & WING DECK DRIVES**



CD7495

## FM1012, FM1015 & FM1017 REAR & WING DECK DRIVES

### FM1012 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP1023226		Drive, Cmpl 40, 21.3 x 32.3
1	5WP1026999	1	Complete collar yoke C12
2	5WP36990	1	U-Joint Repair Kit 50
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026987	1	Complete shield
9	NSS	1	Outer half shaft
10	NSS	1	Inner half shaft
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	5WP1026985	1	Outer yoke & tube
15	5WP1026986	1	Inner yoke & tube

### FM1015 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP1023227		Drive, Cmpl 40, 25.6 x 40.9
1	5WP1026999	1	Complete collar yoke C12
2	5WP36990	1	U-Joint Repair Kit 50
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026990	1	Complete shield
9	NSS	1	Outer half shaft
10	NSS	1	Inner half shaft
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	5WP1026988	1	Outer yoke & tube
15	5WP1026989	1	Inner yoke & tube

### FM1017 Wing Drive

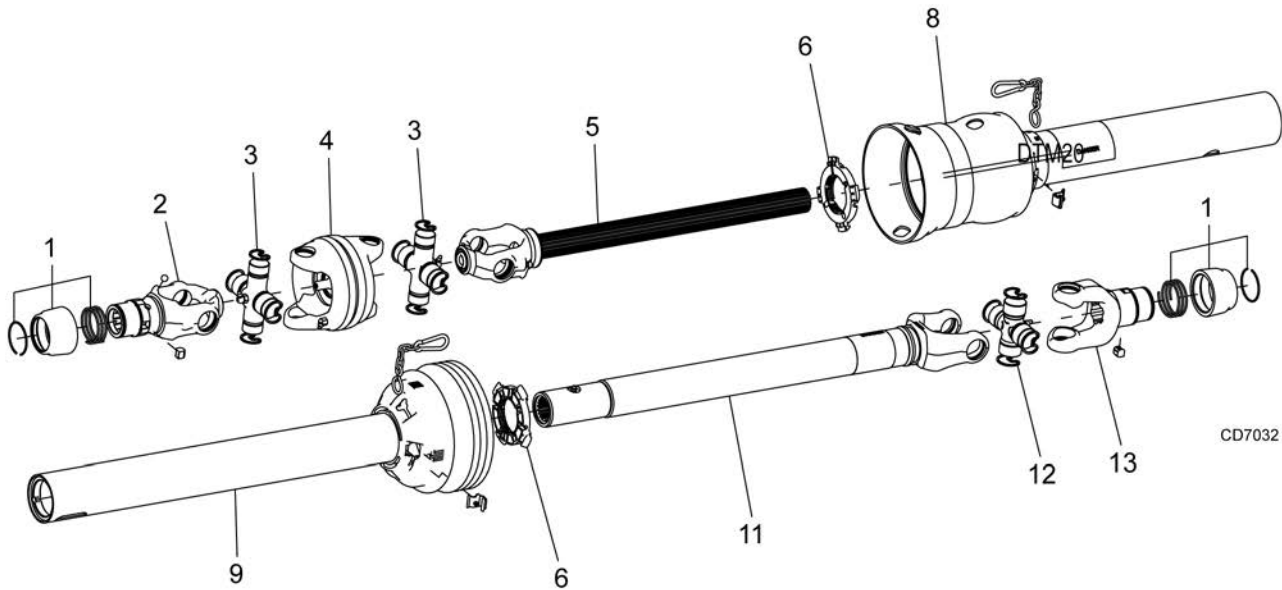
REF	PART	QTY	DESCRIPTION
A	5WP1023228		Drive, Cmpl 40, 28.3 x 46.4
1	5WP1026999	1	Complete collar yoke C12
2	5WP36990	1	U-Joint Repair Kit 50
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026998	1	Complete shield
9	NSS	1	Outer half shaft
10	NSS	1	Inner half shaft
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	5WP1026991	1	Outer yoke & tube
15	5WP1026992	1	Inner yoke & tube

### All Rear Wing Drives

REF	PART	QTY	DESCRIPTION
A	5WP1023225		Drive, Cmpl 40, 26.9 x 43.5
1	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
2	5WP38478	1	U-Joint Repair Kit 2300
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026984	1	Complete shield
9	5WP1026978	1	Outer half shaft (includes outer half of item 8)
10	5WP1026979	1	Inner half shaft (includes inner half of item 8)
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	NSS	1	Outer yoke & tube
15	NSS	1	Inner yoke & tube

NSS      Not Serviced Separately

## CV DRIVE ASSEMBLY



ITEMS 7 & 10 NOT SHOWN

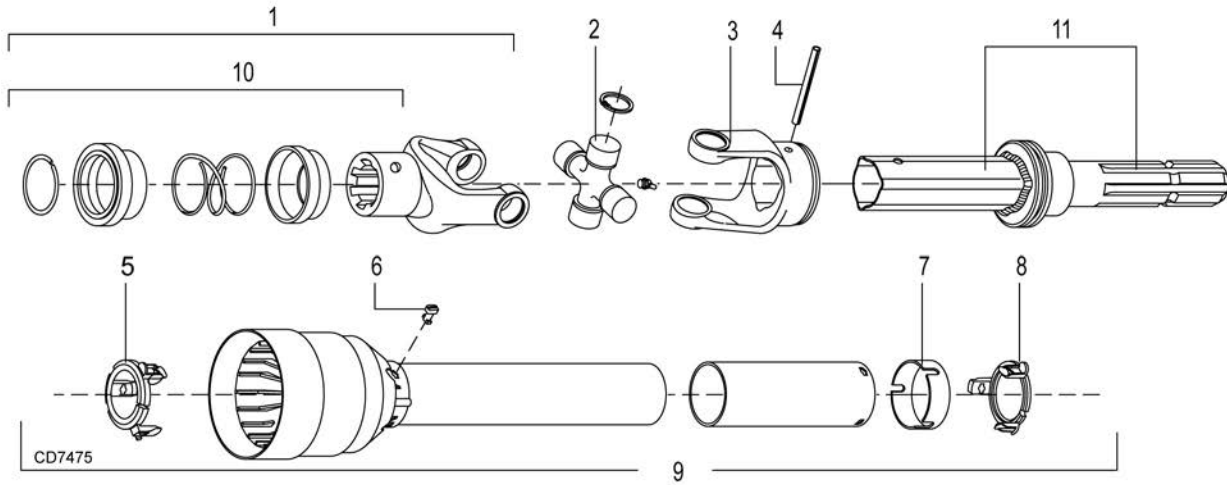
REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
A	5WP1021100	1	Drive, Cmpl CV 35R, 35.0 x 47.6	7	5WP18864	1	Decal, danger rotating driveline
1	5WP19851	2	Slide lock repair kit	8	5WP1021302	1	Outer shield CV
2	5WP1021301	1	Yoke QD CV 1-3/8 - 6	9	5WP1021303	1	Inner shield CV
3	5WP52520	2	U-Joint repair kit 35CV	10	5WP33347	1	Decal, danger guard missing
4	5WP52522	1	CV Body w/fitting	11	5WP1021304	1	Yoke and tube 35R x 27.5 x 1.31 - 20
5	5WP1021321	1	Yoke and shaft - CV splined 20.9	12	5WP110	1	Universal joint repair kit 35N
6	5WP1024636	2	Drive shaft bearing kit	13	5WP55143	1	Yoke QD 36 1-3/8 - 6

**56 Parts**

5WPMAN0862 (11/22/2010)

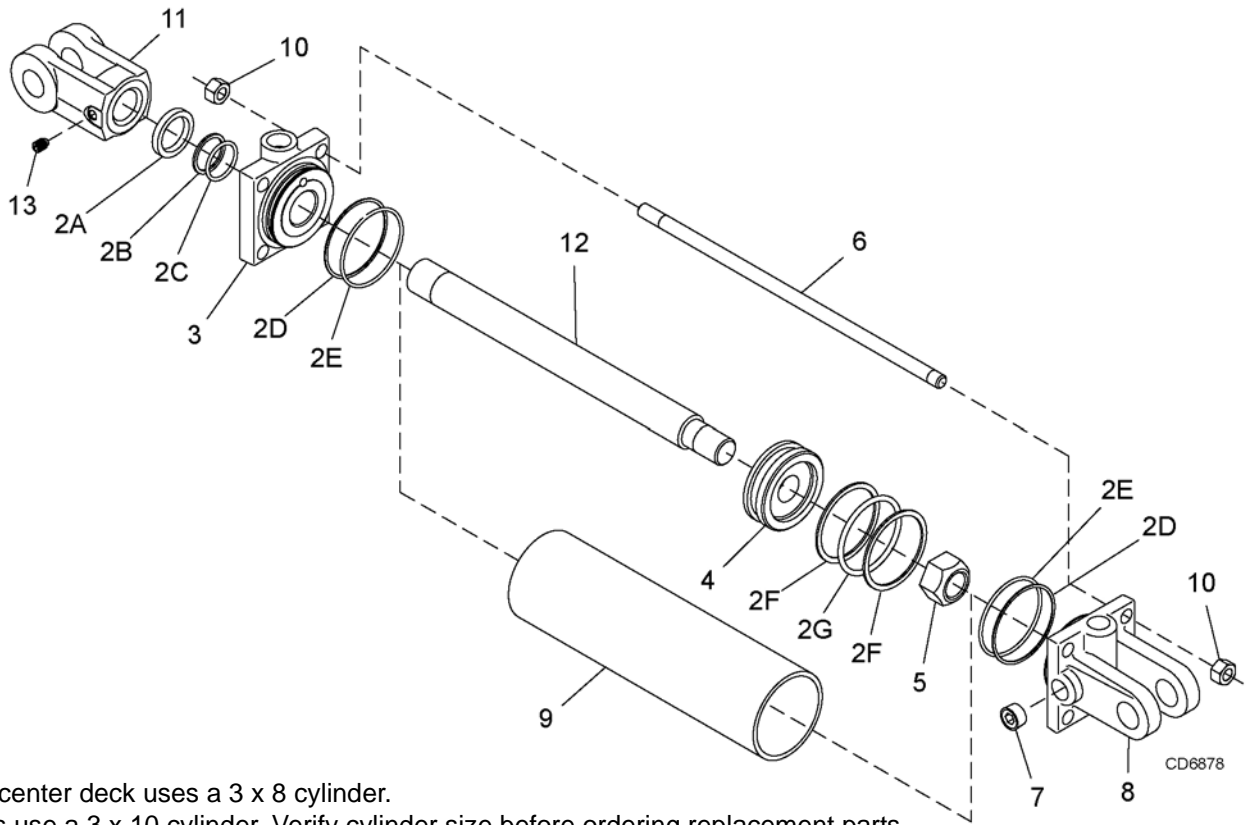


## JACKSHAFT DRIVE ASSEMBLY



REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
A	5WP1011759		Complete jackshaft drive assembly	6	5WP30922	6	Retainer, shield
1	5WP1028775	1	Complete collar yoke	7	5WP1011757	1	Centering ring
2	5WP36990	1	U-Joint repair kit	8	5WP1011755	1	Inner bearing ring
3	5WP1011756	1	Yoke, outer	9	5WP1011754	1	Shield, complete (includes 5, 6, 7 & 8)
4	5WP1001330	1	Flexible pin	10	5WP1001340	1	Lock collar repair kit
5	5WP1028776	1	Outer bearing ring	11	NSS	1	Jackshaft
					NSS		Not Serviced Separately

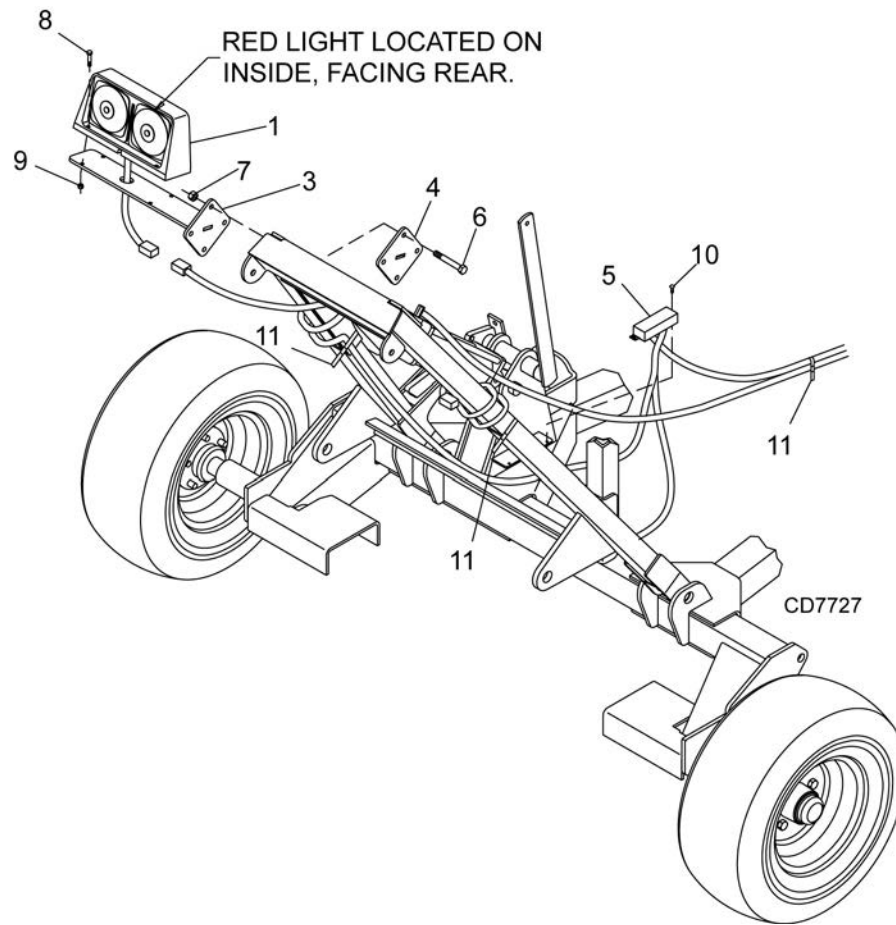
## HYDRAULIC CYLINDERS



**Note:** The center deck uses a 3 x 8 cylinder.  
Wing decks use a 3 x 10 cylinder. Verify cylinder size before ordering replacement parts.

REF	3 x 8 PART	3 x 10 PART	QTY	DESCRIPTION
1	5WP29474	5WP1031166		Complete cylinder
2	5WP19810	5WP19810	1	Seal repair kit (includes items 2A - 2G)
2A	†	†	1	Wiper seal
2B	†	†	1	Rod seal
2C	†	†	1	Rod O-ring
2D	†	†	2	Cap seal
2E	†	†	2	Cap O-ring
2F	†	†	2	Piston seal
2G	†	†	1	Piston O-ring
3	N/S	N/S	1	Cylinder housing - rod end
4	N/S	N/S	1	Piston
5	N/S	N/S	1	Jam nut
6	N/S	N/S	4	Cylinder tie rod
7	*	*	3	1/2 Pipe plug
8	N/S	N/S	1	Cylinder housing - butt end
9	N/S	N/S	2	Cylinder barrel
10	N/S	N/S	8	Tie rod nut
11	N/S	N/S	1	Cylinder clevis
12	N/S	N/S	1	Cylinder rod
13	*	*	1	Set screw 3/8 x 3/4 dog point Included in seal kit Standard hardware, obtain locally Not serviced

## LIGHT KIT (OPTIONAL)

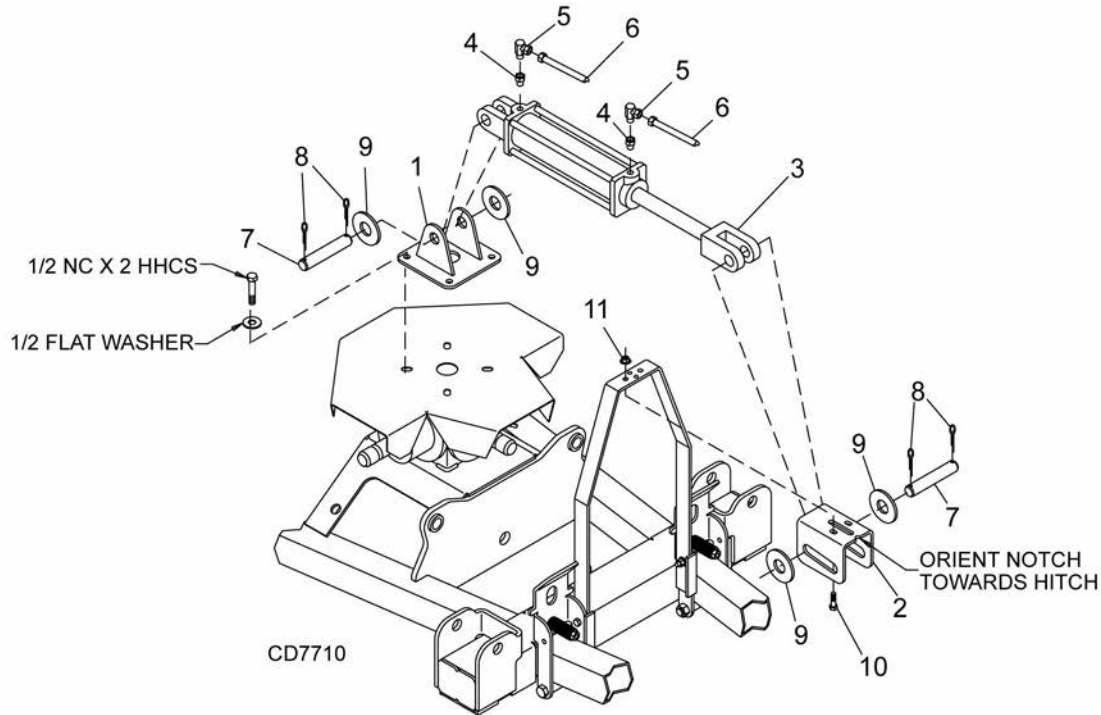


REF	PART	QTY	DESCRIPTION
	5WD1031385		TBW Light kit
1	5WP90401149	1	Light, 4 pin right
2	5WP90401150	1	Light, 4 pin left
3	5WP1031386	2	Light bracket
4	5WP1031388	2	Blank .16 x 4.00 x 4.00
5	5WP1004479	1	Wire harness
6		*	3/8 NC x 3-1/2 HHCS GR5
7		*	3/8 NC Flange lock nut
8		*	1/4 NC x 1 Hex head cap screw GR5
9		*	1/4 NC Lock nut
10		*	#10 x 1/2 Tapping screw
11		*	34 Cable tie

HHCS Hex head cap screw

\* Standard hardware, obtain locally

## HYDRAULIC LATCH RELEASE KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
	5WD1032454		TBW Hydraulic Latch Release Kit
1	5WP1032479	1	Release Base
2	5WP1032489	1	Slide Channel
3	5WP29547	1	3 x 8 Hydraulic Cylinder
4	5WP11893	2	Busing, Pipe Reducing 1/2 x 1/4
5	5WP10290	2	Elbow, 90° 3/32 RSTR 1/4 x 1/4
6	5WP17628	2	Hose, HP 1/4 NPT x 108
7	5WP8345	2	Pin, 1 x 4.08 Headless
8		*	Cotter Pin, 1/4 x 1-1/2
9		*	1" Standard Flat Washer
10		*	3/8 NC x 1 HHCS GR5
11		*	3/8 NC Flange Lock Nut

HHCS Hex Head Cap Screw

\* Standard hardware, obtain locally

### INSTALLATION INSTRUCTION

1. Remove four 1/3 NC x 2 hex head cap screws and 1/2" flat washers from top of shield on trailer.
2. Attach item 1 on top of shield using hardware previously removed.
3. Attach item 2 to wing release lever using items 10 and 11.
4. Attach base end of cylinder (3) to item 1 using items 7, 8, and 9. Cylinder ports should be pointing upward.
5. Attach rod end of cylinder (3) to item 2 using items 7, 8, and 9.
6. Install reducers (4), elbows (5), and hoses to base of cylinder.

# BOLT TORQUE CHART

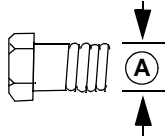
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 MAR 99 & J1701M JUL 96.



## SAE SERIES TORQUE CHART



SAE Grade 2  
(No Dashes)

SAE Bolt Head Identification

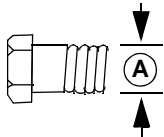


SAE Grade 5  
(3 Radial Dashes)



SAE Grade 8  
(6 Radial Dashes)

Ⓐ Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



## METRIC SERIES TORQUE CHART



Metric  
Grade 8.8

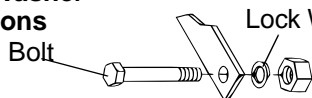
Metric Bolt Head Identification



Metric  
Grade 10.9

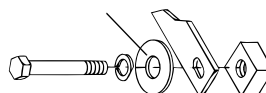
Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	COARSE THREAD				FINE THREAD				Ⓐ Diameter & Thread Pitch (Millimeters)
		MARKING ON HEAD								
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

### Typical Washer Installations



Lock Washer

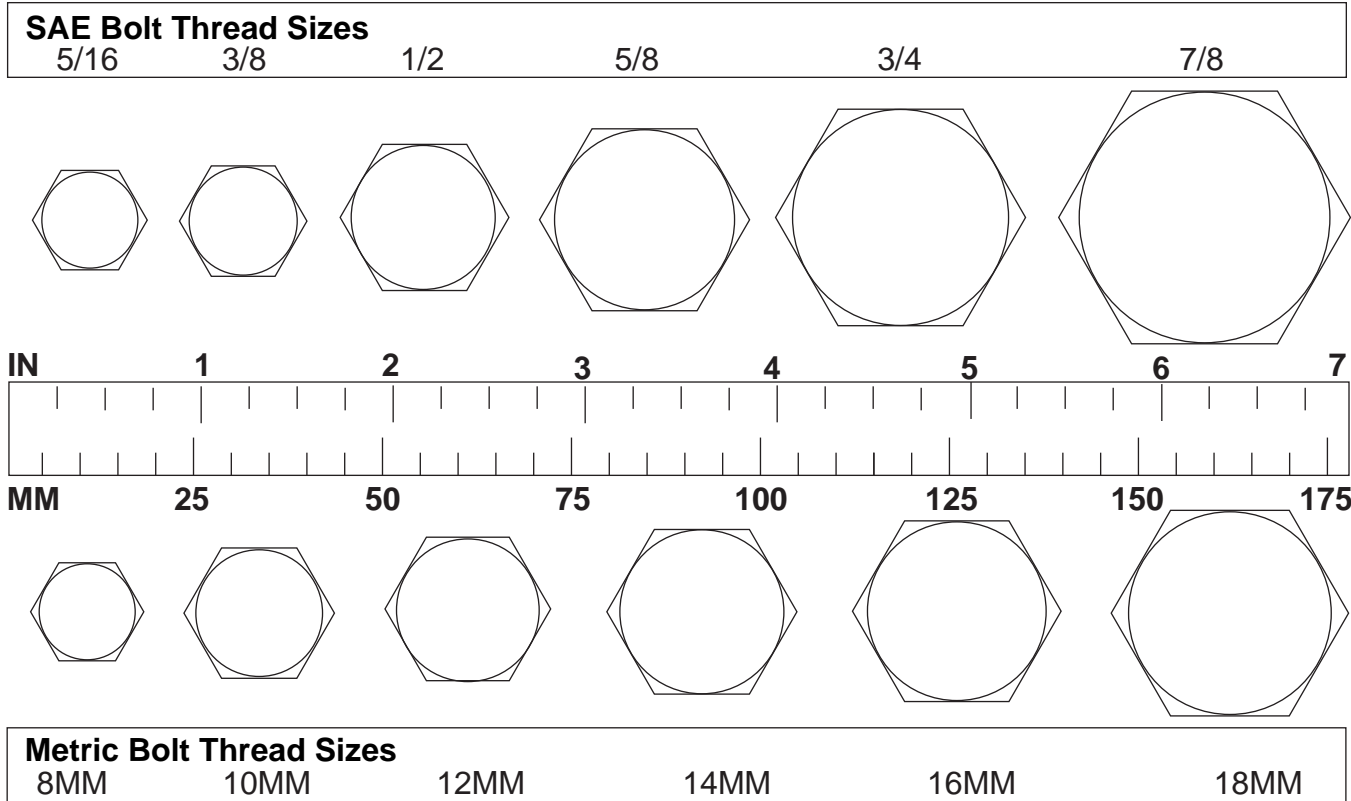
Flat Washer



8/9/00

# BOLT SIZE CHART

**NOTE:** Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.



## ABBREVIATIONS

AG ..... Agriculture  
 ASABE ..... American Society of Agricultural & Biological Engineers (formerly ASAE)  
 ASAE ..... American Society of Agricultural Engineers  
 ATF ..... Automatic Transmission Fluid  
 BSPP ..... British Standard Pipe Parallel  
 BSPTM ..... British Standard Pipe Tapered Male  
 CV ..... Constant Velocity  
 CCW ..... Counter-Clockwise  
 CW ..... Clockwise  
 F ..... Female  
 FT ..... Full Thread  
 GA ..... Gauge  
 GR (5, etc.) ..... Grade (5, etc.)  
 HHCS ..... Hex Head Cap Screw  
 HT ..... Heat-Treated  
 JIC ..... Joint Industry Council 37° Degree Flare  
 LH ..... Left Hand  
 LT ..... Left  
 m ..... Meter  
 mm ..... Millimeter  
 M ..... Male

MPa ..... Mega Pascal  
 N ..... Newton  
 NC ..... National Coarse  
 NF ..... National Fine  
 NPSM ..... National Pipe Straight Mechanical  
 NPT ..... National Pipe Tapered  
 NPT SWF ..... National Pipe Tapered Swivel Female  
 ORBM ..... O-Ring Boss - Male  
 P ..... Pitch  
 PBY ..... Power-Beyond  
 psi ..... Pounds per Square Inch  
 PTO ..... Power Take Off  
 QD ..... Quick Disconnect  
 RH ..... Right Hand  
 ROPS ..... Roll-Over Protective Structure  
 RPM ..... Revolutions Per Minute  
 RT ..... Right  
 SAE ..... Society of Automotive Engineers  
 UNC ..... Unified Coarse  
 UNF ..... Unified Fine  
 UNS ..... Unified Special

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**PART NUMBER**  
**5WPMAN0862**